

# The Chemical Age

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## Contents

### PAGE

EDITORIAL NOTES: The Late Sir John Benn; The Future of British Dyestuffs; Lever Brothers' Successful Year; Dr. Newton Friend on Combustion .....	479
Death of Sir John Benn .....	482
British Dye Manufacturers State their Case .....	483
Safeguarding of Industries: The Merchants' Point of View .....	486
Society of Public Analysts .....	487
First Appeal under Safeguarding Act .....	488
Correspondence: British Traders and South America; The Pasteur Memorial .....	489
From Week to Week .....	490
References to Current Literature .....	491
Patent Literature .....	492
Market Report and Current Prices .....	495
Scottish Chemical Market .....	497
German Chemical Trade Notes; Nitrate Position .....	498
Company News; Chemical Trade Inquiries; Tariff Changes .....	499
Commercial Intelligence; New Companies Registered .....	500

**NOTICES:**—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

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## Sir John Benn

By the death of Sir John Benn the nation has lost a public man with a long and honourable record of political and municipal service, and the firm of Benn Brothers, Ltd., a chief under whom all considered it a pleasure to work. He was, perhaps, less known as a commercial than as a public man; yet he and his three brothers—who formed through life a wonderfully happy and successful fellowship of workers—have achievements of note to their credit. The first was the establishment in 1880 of *The Cabinet Maker*, a journal whose teaching under the inspiration of Sir John was the chief instrument in rescuing English furniture design from the tawdry and depressing Victorian influences, and in re-discovering the beauty, in line, proportion, and ornament, of the work of Chippendale, Sheraton, Heppelwhite, and others. To the exposition of the merits of this—at that time—neglected school he brought a vigour of criticism and advocacy which even now lives in his early writings in the 'eighties. On this first success—the result of hard and courageous work—many others in the same field

followed, until to-day the firm issue an exceptionally strong group of trade and technical journals, and are widely known as standard text-book publishers. Sir John Benn's real interests, however, lay in public work, and his record on the London County Council alone gives him a place and a name not soon to be forgotten. He was an unyielding fighter for the causes he favoured, completely versed in the art of dialectics, and possessed of that indefinable sense of "atmosphere" which counts for so much in such matters. In private life he was a delightful companion, with an infectious humour and gaiety, and it is hard to say who will miss him the more—those who worked and fought with him as a public character, or those who enjoyed the refreshment of his personal friendship and society. In Sir Ernest Benn he is succeeded by a son whose devotion and self-effacement went far to make his father's public career possible, and who, it is safe to say, will place high among his aims that of keeping worthily the tradition he inherits with the title.

## The Future of British Dyestuffs

In their speeches and replies to questions at the Savoy luncheon last week the manufacturers of British dyestuffs met their opponents quite squarely on the facts and arguments, and the only cause for regret was that the opponents were not present to hear their case. It is necessary in this matter to keep the essential features clear of the mass of details in which they are apt to be lost. The fundamental point is whether we are resolved to have a dyestuff industry worth the name in this country or are prepared to surrender to Germany and other foreign competitors. There is no middle course. If the Dyestuffs Act, which keeps out, as it was intended to do, competitive foreign dyestuffs, were repealed, Germany at the present abnormal rates of exchange could swamp the home industry. Not only the Dyestuffs Corporation, but every other firm would be more or less involved in the disaster. Everyone would not necessarily be put out of existence, but at a time of great difficulty in trade they would be exposed to increasingly fierce competition. For Germany would certainly not scruple to undersell, even at a present loss, those British competitors who still held their ground, with the deliberate purpose of destroying the British industry. That done, she would be able to recoup herself at her leisure. The loss would not be merely commercial, serious as that would be. It would include the loss of our greatest school of chemical research and the destruction of all hope of building up an organic chemical industry. It would be a reversion to the humiliating position of dependence on foreign sources which the war so vividly brought home to everyone. It is not a British habit to leave things once begun half done. We

carried the war through to a finish. We can carry the dyestuffs industry through equally well. It is inconceivable that the nation, with the evidence before it of what has already been accomplished, will entertain the folly of wrecking such a vital national work half-way through.

If we are not prepared frankly to surrender to Germany—and that is what the repeal of the Act really means—there is only one alternative course—that is, steadily to proceed with the work of building up a national industry that will ultimately be equal to home and Empire demands. Admittedly we have not yet reached that stage; but the progress towards it is matter for wonder and congratulation. Admittedly the ultimate end cannot be obtained without present sacrifices and sustained exertion. But is anything worth having obtained without these conditions? No one can say what patience and faith the production of "Mauveine" cost Perkin. It is a humiliation to reflect that this brilliant discovery was left to be commercially exploited by Germany. The manufacturers of that day might have made it a new starting-point for British industry, but it was too much trouble or too much expense, and we have paid heavily for that lack of faith and vision. To-day the manufacturers are doing their duty in trying to recover the lost ground, and this time others are striving to repeat the national blunder of 1856. It is cheaper to buy from Germany, they argue; why bother to make ourselves independent when we can get all we want so easily from others? National reputation, national pledges to those who came to the country's aid in time of need, the claims of those who have sunk hundreds of thousands in the business, the future of the whole dyestuffs industry, with its inevitable bearing on the organic chemical industry—all these considerations have suddenly ceased to count; we are invited to give up the job and accept defeat. We do not think the country, when the facts are put before it, will hear of such a surrender.

We have said that a great new industry of this order cannot be built up without some present sacrifices. The facts given by Mr. Morton and others show, however, that the sacrifices are nothing like as heavy as the advocates of free trade in German competitive dyes have represented. If the figures given in reply to questions are representative, they show that the cost of British dyestuffs is an almost negligible factor in the cost of finished textiles; that, in fact, the prices of bleached goods have advanced twice as much as the prices of dyed goods. If Mr. Morton's figures are wrong it should be easy to refute them; in the absence of refutation they settle this particular myth. Other equally important points are these—that where we are producing our own dyes the German prices of corresponding dyes are low, and the British user is already benefiting; that where we are not producing for ourselves the German prices are high—according to Sir William Barton, M.P., from 400 to 800 per cent. higher. Only the very innocent or the very stupid would think in such circumstances of walking into the inviting German parlour. A consideration of the whole position leads to only one conclusion. We must go on with the job and make a success of it. "A fighting chance" to make good against time is all that Sir William Alexander asks for, and that is all the Dyestuffs Act pretends to offer.

But what, it may be asked, is to become of our merchants, who have lived on free imports? We have frequently emphasised the important part which the merchants have played in building up our international trade, but we do not think they would really wish to break down a national British industry merely to be able to import foreign dyes without restriction. We believe their objection to the Act has been appreciably increased by the refusal of the Board of Trade to recognise them on the licensing committee. The presence of one representative merchant could not have changed the committee's policy; but such a recognition would have done something to placate the merchant interest, and would have assured every merchant applicant that at least the merchant's point of view was not being ignored. This deliberate non-recognition of the merchants was, in our opinion, a tactical blunder. On the other hand, the merchants may be equally mistaken in allying themselves openly with a political movement to repeal an Act passed to run for ten years, and to expose British dyestuff manufacturers to the peril of extinction. It has always seemed to us that there is both need and room for a much better understanding than exists at present between British manufacturers and merchants. At points they are necessarily competitors, but by mutual understanding and good feeling it should be possible to bring these competitive activities within a common loyalty to British industry, both productive and distributive.

#### Lever Brothers' Successful Year

AMONG the interesting points brought out by Lord Leverhulme in his speech at the annual meeting of Lever Brothers, Ltd., was that this great undertaking now embraces no fewer than 158 associated companies, of which the first was founded about 1747. It is also interesting and gratifying to find that Lord Leverhulme attributes the present success of the business to co-partnership more than to any other individual cause. Conspicuously successful in the gas industry, co-partnership has up to the present been more generally praised than practised on the whole. The experience of Lever Brothers is therefore of practical value to employers, the cost of installing such a system being more than compensated by the resulting greater freedom from labour unrest. Lord Leverhulme was able to make a very reassuring statement on trade prospects. As for the past year they had secured excellent results in one of the most difficult years they had ever had to meet, the home trade of the associated companies showing striking increases in sales. The export trade slump appeared to have spent itself, and Lord Leverhulme was confident of a steady, if slow, return to pre-war conditions. The one dark spot in their development was Nigeria and other British West African Colonies, where trade recovery was hampered by "a short-sighted fiscal policy." In particular, Lord Leverhulme instanced the fact that while the railways of the Belgian Congo were charging approximately one penny per ton per mile for the conveyance of palm kernels the Nigerian Government Railways charged an average of sixpence per mile. The findings of the committee on trade and taxation in British West Africa clearly showed that the severe

burden and handicap thus imposed on British West African trade and commerce were bad in principle and impossible in their application.

Lord Leverhulme, in the course of a comprehensive survey, drew attention to a graphic diagram showing the proportion of dividends paid as compared with expenditure on salaries, wages, interest charges, &c., and raw materials. The diagram shows that very nearly three-quarters is absorbed by the purchase of oils and fats, and that the next largest item comprises packing, rates, rent, transport, and advertising. Salaries and wages, and interest on capital and bank charges come next, while ordinary dividends, including the distribution to co-partners, represent the smallest percentage of the total. The issue of diagrams of this nature is useful in indicating both to consumers and employees that, although considerable profits may be earned on a large capital, the return to the ordinary shareholder may represent only a small fraction of the total turnover.

### Dr. Newton Friend on Combustion

IN a little volume entitled "The Chemistry of Combustion" (Gurney & Jackson, price 4s. net) which we have lately received the author, Dr. J. Newton Friend, in the lucid and entertaining style of the practised lecturer, has managed to fill a very obvious gap in our literature. We draw attention to the book for the reason that, although it is primarily intended for students, there is every necessity to-day that works managers of all descriptions should understand at least the outlines of the theories of combustion, but they are actually discouraged from following the subject up when confronted with voluminous treatises in which all the more advanced theories are dealt with *in extenso*. Dr. Newton Friend, however, has covered in a hundred readable pages all those salient points which the practical man wants to know; and he has refrained from ornamenting his points with obscure formulæ and equations which, though beloved of the more academic mind, are calculated to throw the works mind into a state of confusion. We may take, for example, our everyday association with the combustion of solid carbon. The practical man knows full well that, according to whether carbon is burnt with an excess or a restricted quantity of air, whether his fuel bed is deep or shallow, that the products of combustion differ as regards their content of carbon dioxide and carbon monoxide. His practical intuition, moreover, guides him in the regulation of conditions so that he can obtain something approaching a theoretical maximum of what he requires. Quite a considerable amount of research has been carried out in connexion with the manner of formation of the carbon monoxide, and at the moment its presence can be accounted for in three distinct ways. A fascinating theory has been put forward by Rhead and Wheeler, who have concluded that certain carbon and oxygen complexes of unknown formula are the primary products; but attractive as the theory is, it is not definitely proven. Dr. Friend, therefore, does not give us a laboured description of the theory; but, as with all the other subjects upon which he touches, he tells us just sufficient to let us know that we are dealing with something more complicated than is generally supposed, and provides an incentive for those with the time and inclination to pursue the matter further.

### Points from Our News Pages

The death is announced of Sir John Benn, Chairman of Benn Brothers, Ltd., and a sketch of his career is published (p. 481).

At a luncheon in London on Friday, April 7, given by British dye manufacturers, statements were made and recent criticism replied to by Sir William Alexander, Dr. A. T. de Moulpied, Mr. Morton, and others (p. 483).

At a recent meeting of the Chemical Merchants and Users' Vigilance Committee Mr. Victor Blagden (Chairman), Mr. F. T. T. Reynolds and others criticised the administration of the Dyestuffs and Safeguarding of Industries Acts and appealed for support to the movement for their repeal (p. 486).

According to our London Market report a fair business has been done in chemicals during the week, with slightly more disposition to place orders for forward account (p. 495).

Inquiries during the past week, our Scottish market report states, were more plentiful, though the amount of business actually transacted was still small (p. 497).

### Books Received

IMPURITIES AND FALSIFICATIONS OF CHEMICALS, THEIR DETERMINATION AND RECOGNITION. By Dr. R. Strauss. Translated into English. Germany: Meissen, Bohlmann Verlag. Pp. 94.

POWER ALCOHOL. By G. W. Monier-Williams. London: Henry Frowde and Hodder and Stoughton. Pp. 323. 21s. net.

### The Calendar

April 18	Hull Chemical and Engineering Society. Annual Meeting.	Wilberforce Café, Hull.
19	Royal Microscopical Society: "The Use of the Microscope in Cotton Research." Dr. S. C. Harland and H. J. Denham. "The Use of the Microscope in Connexion with the Diseases of Rubber." H. Sutcliffe.	20, Hanover Square, London.
21	Society of Dyers and Colourists, Manchester Section: "The Sulphonation of Fixed Oils." Parts II. and III. L. G. Radcliffe, Miss E. Bramwell, and S. Medsforth.	Manchester.
24	Chemical Industry Club. Monthly meeting. "Cotton from Plant to Fabric." W. Perry. 8 p.m.	2, Whitehall Court, London.
26	Society of Glass Technology. Fifth annual meeting. Presidential address. Annual Dinner at the Royal Victoria Station Hotel at 7 p.m.	The University, Sheffield.
27	South-Western Polytechnic: Lecture on Petroleum. I. F. Esling. 2 p.m.	South - Western Polytechnic, Chelsea, London.
27	University of Sheffield: "The Constitution of Coal." Dr. Marie Stopes. 5.30 p.m.	The University, Sheffield.
27	Oil and Colour Chemists' Association: "Studies of Precipitation." F. E. Jennison.	The Food Reform Club, Holborn, London.
28	Royal Institution: "Vitamin Problems." A. Harden. 9 p.m.	21, Albemarle Street, Piccadilly, London.
MAY 2	Institution of Chemical Engineers: Inaugural Meeting 8.30 and Dinner 7 p.m.	Hotel Cecil, London.
1	Society of Chemical Industry: Annual Meeting.	Burlington House, Piccadilly, London.
1	Photographic Fair opens.	Royal Horticultural Westminster Hall, London.



## Death of Sir John Benn

We greatly regret to announce the death on Monday, April 10, in his 72nd year, of Sir John Williams Benn, Bart., D.L., J.P., L.C.C., of "Stone Wall," Limpsfield, Surrey, "Father" of the London County Council, and Chairman of Benn Brothers, Ltd. (proprietors of THE CHEMICAL AGE).

The eldest son of the Rev. Julius Benn, Sir John, who was born at Hyde, in Cheshire, started his business life in London as an office boy, and rose to be the head of the firm of Benn Brothers, Ltd., the leader of the Progressive Party and Chairman of the London County Council, Deputy Lieutenant for the County of London, a baronet, and a member of Parliament. His career in Parliament was confined to the years 1892-1895, when he represented St. George's-in-the-East, and 1904-1910, when he sat as the member for Devonport. He was the last survivor amongst serving members of those who were elected in 1899 to the first London County Council, of which Lord Rosebery was chairman. Twelve months ago, at a luncheon given in his honour as "Father" of the L.C.C., his thirty-two years of municipal work was referred to in a message from the King, which expressed His Majesty's interest and pleasure at hearing of the recognition of Sir John Benn by his friends and admirers for his long service in the government of London.

When questioned about the foundation of the firm of which he was the head, Sir John Benn always attributed it to his love of drawing. The story of the inception and launching of *The Cabinet Maker* in 1880 is, indeed, little short of romance, more so because of the complete justification which later years brought to the young enthusiast who had, in fact, sacrificed all he possessed to an ideal. As a youth, John Williams Benn recognised the importance of cultivating his artistic talent, and by studying at South Kensington and devoting most of his youthful

leisure to the subject he acquired a very thorough knowledge of architecture, decoration, and furnishing. To supplement his abilities on the technical side, he served successively as draughtsman, salesman, manager, and eventually partner in a large furniture manufacturing concern. During this time he was a constant contributor to *The Furniture Gazette*, and reviewed and illustrated the furnishing side of the Paris Exhibition of 1878. He subsequently abandoned cabinet manufacturing for journalism. It was a bold step and regarded at the time by cautious friends as highly imprudent, but it was characteristic of Sir John, who all his life had a habit of taking risks in pursuance of cherished ideals. Those were the days of the worst features of Victorian furnishing, and the young journalist consistently advocated a return to tradition and a development of the eighteenth century work of Chippendale, Heppelwhite, and Sheraton.

At the outset most of the illustrations in *The Cabinet Maker* were the work of Sir John's own hands; later he was joined by his brothers, Julius Taylor Benn and R. Davis Benn, both of whom have passed away, and Mr. H. P. Benn, who survives him. They devoted their attention to the

business which their elder brother had founded, and left him free for his municipal and Parliamentary activities. Sir John lived to see the business which he established grow to be the largest trade and technical publishing house in the country. He has, in spite of the calls on his time made by his public work, found time to inspire, if not to direct, constant fresh developments in the firm of which he was the chairman.

In 1900 *The Hardware Trade Journal* was purchased, and immediately became a power in the industry it represents. This was followed at short intervals by *International Marine Engineering* and *The Export World*. Among the properties which have been acquired may be mentioned *Ironmongery*, *Commercial Intelligence*, and *El Comerciante*. More recent developments include the acquisition of *The Electrician*,

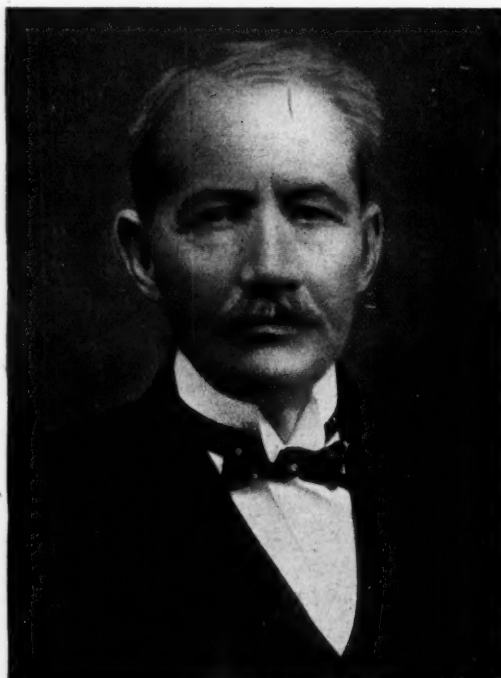
*The Fruit Grower*, *The Gas World*, *Farm and Home*, and *Gardening Illustrated*. Nearly three years ago the firm started THE CHEMICAL AGE, already one of the most prosperous of their journals. Side by side with the growth in trade and technical journal publishing there has also been developed a very large business in the highest class of technical and art books. This department first confined its attention to the well-known series of standard books dealing with electricity, gas, horticulture, cabinet making, and aeronautics, but more recently it has published fine books in every branch of science, technology, and art.

Sir John Benn travelled widely and took a leading part in the Argentine Centenary Celebrations in 1910, traversing the whole of the Continent to the Pacific coast. He was frequently abroad at the art centres on the Continent in search of material for the pages of the journal which he founded.

In the year 1874 he married Lily, the youngest daughter of the late John Pickstone of Silver Hill, Hyde. There were three sons and two daughters of the marriage. Mr. Ernest J. P. Benn, the eldest son, is the present managing director of Benn Brothers, Ltd. Captain Wedgwood Benn, M.P., D.S.O., D.F.C., is the member for Leith. The youngest son, Captain Oliver Benn, was killed in Gallipoli in 1917, while serving with the Somerset Light Infantry. Lady Benn, who survives Sir John, has been an enthusiastic supporter of his public work.

Sir John Benn was amazingly versatile, successful not only as a newspaper proprietor and publisher, but in many other walks of life. During his allotted span of life he had played his part as a designer, playwright, lecturer, artist, journalist, sportsman, one of the most energetic political personalities in London, and as the friend of hundreds of people who will sincerely regret his loss. Apart from his qualities as a public man, Sir John owed his success largely to his engaging personality. He was a delightful companion, with an inexhaustible supply of humour and good stories.

The funeral took place at noon on Thursday at Limpsfield, Surrey, and a memorial service was held at the same hour at Christ Church, Westminster Bridge Road, London.



THE LATE SIR JOHN BENN.



## British Dye Manufacturers State their Case

### Recent Criticism Challenged and Answered

At the Savoy Hotel, London, on Friday, April 7, a large number of representatives of the daily and technical Press and other guests attended a luncheon given by the British Dyestuffs Corporation and other dyestuff manufacturers for the purpose of enabling them to inspect a collection of British dye products, and of hearing statements respecting the present position of the British dyestuff industry. Sir William Alexander, chairman of the Corporation, presided, and the guests included, in addition to press representatives, Mr. W. J. U. Woolcock, M.P., Dr. M. O. Forster, Dr. A. T. de Moulpied, Mr. Morton, Mr. Dawson, Major Holliday, Mr. Whetmore, Mr. Verrinder, Mr. J. C. Wilson, Mr. Robert Williamson, Mr. C. W. Gough, Mr. Mackay, Mr. Clement Shorter, and others.

#### Some Interesting Exhibits

Many of the exhibits on view were similar to those shown at the recent British Industries Fair, and to those who had not previously seen them they came as a revelation of what is already being produced in this country, while the explanations by experts of the bearing of dyestuffs on other national interests were equally interesting. In addition to the jar containing the original dyestuff "Mauve, 1856," prepared by Perkin in his laboratory, the samples included the first Azo colours produced on a laboratory scale by Peter Gries, chemist at Allsopp's Brewery, which afterwards were taken up and manufactured in Germany by the Berlin Anilin Co. The Lake colours included some struck on to barytes for colouring inks, and the Lake made by Brook, Simpson, & Spiller, one of the earliest aniline dye makers in London. Attention was drawn to an exhibit of film colours, dyed in a perfectly cold bath. The solution, it was pointed out, has to be perfectly clear, otherwise the dyeings would be spotty. When it is considered that on the largest screen the actual picture is magnified 20,000 times the importance of the purity and solubility of the dyestuff can be realised. Some British-made colours on artificial silk and pure silk were shown which were dyed at a dyehouse in East London, originated by the Huguenots when the Spitalfields silk industry was started by them. Persian goat-skins dyed with British colours and finished on four grains showed the value of colour, viz., full levant, half levant, hard morocco veneer finish, and imitation crocodile. Skins of chamois leather were shown, dyed to art shades for penetration (or velvet finish), and skins of vegetable tanned calf and suede which are used in the highest class Northampton trade. A new feature was a collection of articles manufactured by the Rainbow Novelty Co., entirely produced with British dyes, showing the effects that can be obtained by a wealth of colour. These included scent bottles, hat pins, necklaces, &c., largely made out of a hard South American nut, practically a waste product, now turned to most attractive uses with the aid of dyes.

#### Sir William Alexander

After the toast of "The King" had been drunk, THE CHAIRMAN made a statement respecting the object of the gathering.

The British dyestuffs industry, he said, is one which, as is known to every one in the room, provides an almost never-ending source of material for public discussion. On many occasions in the past those who are charged with the conduct of the industry have called you together and have explained to you one or other of the many interesting phases of the problem with which they were dealing, which information you have been good enough, through the organs which you serve, to place before the public for their interest and edification. Thus in the past a very full account of the part which the dyestuffs industry was called upon to play in the military affairs of the Empire has been published, with the result that the man in the street does realise that conceptions of warfare have changed, and that the dyestuffs industry is a vital necessity if the Empire is to retain its world-wide prestige. The part which the dyestuffs industry plays in supporting the work of the world during times of peace has also been explained from time to time in the Press. Those of you who had an opportunity of visiting the British Industries Fair and of examining in detail the chemical exhibit (which was

organised by the General Manager of the Association of British Chemical Manufacturers, Mr. W. J. U. Woolcock, M.P., whom I am glad to see with us to-day), will retain a clear impression of the multitudinous articles, great and small, in large consumption and in small consumption, which are made with the assistance of synthetic dyestuffs manufactured by British synthetic dyestuffs makers. A smaller exhibit has been arranged to-day for your inspection, and I hope that you will take an opportunity of examining what we have prepared in as much detail as possible. We shall be glad to answer any questions which you may care to put to us.

#### Research Side of the Dyestuff Industry

My object in asking you to meet me to-day was not to develop again the military aspect of the services which we can perform for the nation nor to expound, except through the medium of the exhibit, the part we play in the peace-time life of the country. I rather want to direct your attention to the intellectual side of our work, that is to say, the function and results of research. I think a favourable opportunity has been chosen for the consideration of such questions, for I am sure that there is no one in this room who has not seen the account of the very remarkable achievements of Dr. Renshaw and Mr. Fairbrother, who have been investigating the effects of dyestuffs on the bacilli which are the cause of many diseases. Those of you who saw the newspaper accounts of the paper which those two gentlemen read on March 30 before the Manchester Section of the Society of Chemical Industry will know that they have already reached a point which justifies us in entertaining the very highest hopes that a tremendous step forward has been taken towards the final conquest of many terrible scourges which bring suffering to humanity all the world over. You have here an example of research work, the lesson of which should not be lost. A highly-skilled pathologist and a highly-trained organic chemist, employed in our industry, united together in a personal and scientific friendship, have achieved results which may be of great benefit to humanity for all time. It is an example of disinterested work, but above all it is an example of what may be achieved by bringing together, for co-ordinated work, experts on all the phases of one single scientific problem. In other words, it teaches the lesson that team work is the keynote of successful research.

From my own point of view I am certain that the most valuable result of research in the dyestuffs industry is that it creates and maintains a very highly trained and very deeply experienced body of organic chemists in this country, who in times of stress can apply themselves to any problem of national urgency. It may be a problem of peace or a problem of war, a problem of medicine or a problem of munitions, but who shall say what are the problems of human or of national life to which the science of organic chemistry may not be applied? The British dyestuffs industry, in maintaining a body of research chemists for its own industrial purposes, is establishing and maintaining a national asset, the value of which can scarcely be expressed.

#### Progress of the Dyestuff Industry

You would wish, of course, to hear something of what has been actually achieved in the way of practical research. The story that when in 1915 we started to recreate the synthetic dyestuffs industry in this country on a large scale we were forty years behind the Germans has often been told, and, without offering any opinion on the accuracy of the period of time which has so often been quoted, there is no doubt that we have had a tremendous leeway to catch up. It is principally to the discovery by British brains for the use by British brains of knowledge already possessed by the Germans that our research work has been directed, and I have asked a member of our staff, who has been closely associated with the research work in this country, to be with us to-day in order that he may give you certain instances which, from his point of view as a chemist, are striking, and which, therefore, from your point of view as journalists, may be interesting news. We have, moreover, with us to-day Mr. Dawson, Major Holliday, Mr. Morton, and Mr. Woolcock, who may care to supplement from their own experience the remarks which are about to be made.

I shall not, therefore, myself seek to develop the subject in

detail. I will merely content myself with saying that I am astonished at the vast amount of work which has been completed by our research chemists during a relatively short period, a considerable portion of which was overshadowed by the cloud of war. I am convinced that the brain of the British organic chemist is in every way as good as that of any of his *confrères* wherever you may find them, in any part of the world. (Hear, hear.) The remarkable achievements in the field of medicine to which I have already referred will, I do not doubt, find their reflection in the field of industry, given that sympathy and support to which any young industry is clearly entitled. Many new products have been placed on the market already, and the difference between the pre-war and post-war range of British-made dyestuffs is remarkable. We have been concentrating during the last twelve months on the improvement and cheapening of our products. We have greatly increased our manufacturing efficiencies, whilst the improvement in the dyeing properties of many of our products is most favourably commented upon by consumers. Price must ever be a question of exchange, but I have no doubt that with a return of normal international financial relations we can compete with the Germans even in the most complicated dyes. I think that the British dyestuffs industry is destined to take its place amongst those which have made the country famous. (Applause.) And why not? We have within our borders ample supplies of every requisite raw material and intermediate product for the production of finished colours. We have erected machinery, plant, and buildings which are not inferior to the best German installations.

#### Ultimate Independence of Foreign Supplies

There is no magic wand nor mystery about the production of dyestuffs once the constitution is known, and our research chemists, if we had no other means (which we have), can give us all this information. The production of a dyestuff is a series of perfectly definite chemical reactions requiring, of course, more than ordinary control in practice; but who will say that the operative chemists and physical chemists of the country cannot with enthusiasm and concentrated effort provide the necessary qualities? Eliminate the effect of depreciated German currency and the risk of German dumping below cost for the express purpose of wiping out an industry in its infancy, and I make bold to say that in a relatively short time we should be able to do without the protection we obtain from the Dyestuffs (Import Regulation) Act without prejudice to the consuming industries. (Applause.)

I do not desire to-day to enter upon any political discussion, but I think that I am at least entitled to say this. It is within the knowledge of all of you that certain steps were taken by Parliament to support the industry for which I speak, and, as is to be expected and as is perfectly proper, these measures have opponents of different schools of thought. Quite apart from the key nature of this industry in peace and its decisive character in war, I would say that, because of the part it plays in the scientific development of the community, because of the intellectual asset which it creates for the service of the nation, those who find themselves differing from the clearly expressed wishes of Parliament should pause and reconsider their opinion before they renew their attacks. (Applause.)

#### Dr. de Mouilpied

DR. DE MOUILPIED, in speaking of the research aspect of the dyestuff industry, said:—The term "research" is both ill-defined and ill-used, and any attempt, however brief, to explain what research in industry stands for demands some definition of terms. To search for a thing is to look for it, knowing or believing that it is present. Research, on the other hand, at its highest means the quest for truth. The goal may be distant, but the worker knows that whether he fail or succeed knowledge will be increased. Pure research, carried out without thought of personal gain or specific material usefulness, is both a science and an art. As a science it has its severely logical methods of procedure, and as an art it has its technique, and for its most striking success it unites science and art in the scientific use of the imagination. Research thus defined appears as a highly intellectual exercise, self-centred and impractical. I want to show in the few minutes at my disposal that whatever the discord in the past between pure research and industrial needs it is overwhelmingly certain that in their union lies the only possibility of growth and ultimate success.

#### Examples of Research Results

Before touching on dyestuffs let me take a few typical illustrations of what I mean. Our air contains 1 per cent. of a rare gas called argon, which had lain inert and undetected in our atmosphere until it was discovered and isolated by Ramsay and Raleigh in the laboratory in 1894, as the result of the detection of a difference of  $\frac{1}{2}$  per cent. in the density of two samples of nitrogen. To-day it is used on a large scale for filling half-watt electric lamps. The margarine industry is one of great importance, and ministers directly to the needs of man. The process by which evil-smelling oils are converted into a solid, odourless product of great purity is based on the long and patient researches of two academic researchers. The hydrogenation of fats depends essentially on the work of Sabatier and Senderens, carried out in the laboratory. The incandescent gas mantle, optical glass of high quality, the contact process for making sulphuric acid, the synthetic production of acetic acid, acetone and alcohol, the production of ammonia from nitrogen, all find their origin in the labour of men engaged in pure research.

These far-reaching discoveries did not originate in industry but in the laboratory. But—and this is the second fundamental point—these discoveries would never have reached their present importance without the co-operation of industry and her technologists. Production on the laboratory scale and production on the large scale are different problems to be faced by men of different outlook and different gifts. It would be extremely profitless here to apportion merit as between different forms of genius. This sequence is, however, clear—(1) the discovery by the researcher, (2) the apprehension of its value for practical ends by the man of imagination, (3) the translation of a discovery into mass production. The seed becomes harvest through human co-operation, intelligence, and effort. Sir J. J. Thompson, one of the great names in English science, once said, "Technical research may lead to improvements; pure research leads to revolutions."

#### Research in the Dyestuff Industry

Let us consider the dyestuff industry. Nature abhors a colourless world and spends herself with the utmost prodigality on meadow and mountain, on garden and orchard, on sea and sky. But man has not found Nature's colouring matters adequate to his needs. How did he set about meeting his wants? He did not do so specifically. Pasteur once said, "In the field of discovery chance only favours those who are seeking." Seeking knowledge in his laboratory, W. H. Perkin in 1856 discovered "Mauveine," the first artificial colour made from coal tar. Chemists all over Europe began exploiting this mother source. From the complex black coal tar they extracted some ten different substances, all of them practically colourless. Then by methods of pure research these were converted into derivatives which we call intermediates, and which number some three hundred. These are mostly colourless, and none of value as colouring matters. By combinations between these have been produced and placed on the market some 1,500 dyestuffs. Thousands of others have been prepared, not by the method of trial and error, but by systematic research work. Hundreds of thousands of combinations are possible. Let me give one example—the now classical one of indigo. A certain reaction was discovered by Heumann in his laboratory at Zurich in 1890 which gave indigo in extremely small yield. This was the idea. After many years' research and the expenditure of very large sums, two different processes were worked out which provided synthetic indigo for the world. Here we have the discovery, the recognition of its value, and a development which Heumann alone could never have effected.

#### Reviving the Lost Art of Making Intermediates

What has research done for the British dyestuff industry since the Armistice? It has revived the lost art of making intermediates. In some cases imperfect processes have been sent back to the laboratory and have returned greatly improved, and in others new and better methods have been evolved. Phenylglycine, a vital intermediate for indigo, has been obtained by an entirely new method. The Gallocyanines have been worked out, as have also many Lake colours. Patent Blue, Turquoise Blue, and Brilliant Glacier Blue, all most valuable colours, are now on the market as the result of research work. In no branch has research been more active than in that of the vat dyes, distinguished by their great fastness to light. Duranthrene Brilliant Violet, never previously made in England, is now on sale in every way equal to the



German product. Recently a new group of colours of wide range has been discovered for the dyeing of artificial silk.

It is as true to-day as when Perkin said it in 1868 that the coal tar industry is entirely the fruit of theoretical chemistry. The recognition of this truth in its wider aspects is manifest in the creation of research departments in nearly all industries. To-day the cotton, leather, glass, linen, and wool industries and even an industry of such antiquity as washing one's clothes have their research organisations. We do not ask the public to praise us nor do we expect them to condemn us for spending money on the encouragement of pure research. Rather do we hope that they will see in such endowment a necessary condition of survival, an essentially sound business proposition. But this is but a part—and ultimately not the greater part—of the rewards of research. Research favours intellectual growth, it stimulates genius, it gives opportunity to talent, it fights disease, it makes for a sweeter, cleaner world, and stands for the higher progress which is "order in motion." (Applause.)

### Questions and Answers

SIR WILLIAM ALEXANDER then said that they had a number of experts present who would be very glad to answer any questions.

#### Effect of Dyestuff Prices on Textile Prices

MR. F. E. HAMER said there were one or two questions he would like to be allowed to put which might clear up some commercial aspects of the subject. The first was: "Assuming it to be true that the cost of certain British dyestuffs is higher than that of corresponding foreign dyestuffs, has this difference any appreciable bearing on the price of the finished textile? In other words, what ratio does the cost of the dyestuff bear to the total cost of the finished fabric?"

SIR WILLIAM ALEXANDER: I am very glad that Mr. Hamer has put that question because it gives us an opportunity of explaining what may not be very clear to the public or even to dye users and manufacturers themselves. It is very difficult to get absolutely correct figures, but we have for the year 1913 approximately complete figures to cover this point. I understand that for 1913 the total value of the textile trade in Lancashire, that is, the total value of finished textiles using colour, was 200 million pounds, and the proportion represented by dyestuffs in that production was under 3 per cent. To-day I believe we are well within the mark, taking into account the increased costs, in saying that the cost of dyestuffs does not affect the cost of the finished textile to more than 5 per cent. I think those figures speak for themselves.

#### German Monopolist Prices

MR. HAMER: The next question I have to put is this: "Taking a recent statement by Sir William Barton, M.P., that Germany has put up 400 to 800 per cent. the prices of dyestuffs not produced in this country, should we be right in prawning from this statement two inferences: (1) That as regards the large body of dyestuffs already produced in this country the dye user is getting them at a much lower price than he would have to pay if we did not produce them and had to depend on Germany for supplies? (2) If Germany is charging monopolist prices for all the special dyes which she knows are not produced here, would she not naturally charge similar prices for the whole range of dyestuffs once the British industry had been destroyed and she had recovered her former supremacy?"

SIR WILLIAM ALEXANDER: With regard to the first part of Mr. Hamer's question, it is a fact that for all those colours which we can produce efficiently in this country, the Germans are quoting very much lower prices than it is possible to supply those dyestuffs at. That may be due to their desire to destroy our trade in dyestuff manufacture, or it may be due to the disparity in currency. Whichever may be the true reason I am of opinion that if the German got his opportunity to-day to destroy our progress in this industry, it would pay him for some years to sell his dyes at prices far below the cost of production. The answer to the second part of the question is also in the affirmative. Complaints have been made that when the Licensing Committee passes for import a colour which the Germans make, and which we do not make, the Germans realise that they have the field to themselves, and are charging very high prices indeed for such colours. I think Mr. Morton has one or two very good examples, and I will ask him to let us know what his experience has been, for this is a most important question.

### Mr. Morton's Striking Figures

MR. JAMES MORTON (Scottish Dyers, Ltd.) said that he had recently been making a tour among the dye-users and the textile manufacturers of the country from Leicester right up into Scotland, and he had come across many cases in which the German prices had fallen considerably since corresponding British products had been put on the market. A typical case was that of a certain Yorkshire manufacturer. In this case a colour had just been produced in this country similar to what he had purchased from Germany. He had bought a ton of that colour at 37s. 6d. per lb. Shortly after it had been announced that that colour was being produced in this country, the German price was reduced to something like 15s. per lb. Naturally the manufacturer was very wrath about it. He was carrying about 2,000 lb. of that colour for which he had paid 37s. 6d. per lb., and he found, when he had produced the colour in this country, that he could have obtained it for about 15s. per lb.

That, Mr. Morton said, was very typical of German competitive policy. The moment we produced a colour here the German prices tumbled down purely with a view to upsetting the British user and getting him to agitate for a right to import. He had been to some trouble to ascertain something about German prices, and he found that they varied considerably. Three different prices were given from three different sources. One price was nearly double that of another. So that colour prices from Germany were not consistent, but were quoted with the definite object of upsetting the British user.

As to the cost of finished fabrics one very useful instance could be given. The dyestuff industry was blamed for the collapse in the British textile trade, and a good deal of correspondence had appeared in the papers on the subject. The pre-war importation of colours only amounted to 1½ millions, but up to the end of 1920, immediately before the slump, there was imported 7½ million sterling-worth, so that during the whole of 1921 the textile industry, which was said to be starving for want of colours, was holding from four to five times more colour than before the war. It was a travesty of the truth to say that the British textile industry have suffered in any way.

Another important point was this—one would expect in the textile trade that the textiles most affected in price by dyestuffs would be the cloths in which most colours were used. Textile products fell broadly into three classes—dyed goods, printed goods, and bleached goods. The inference from the complaints he had referred to would be that the dyed goods would show the biggest increase in price, the printed goods next, and the bleached goods last. As a matter of fact, dyed goods showed an increase of 120 to 150 per cent.; the increase in the price of printed goods was 200 per cent., while the increase in the price of bleached goods—a very big trade in China—was 300 per cent. Those figures seemed to him quite decisive.

In his opinion the Germans would not make very much fuss about the dyestuffs industry, if the matter ended there, but we had to remember what the dyestuffs industry was the nucleus of. It was the natural nursing ground, the natural starting point, for organic chemistry as a whole, and it was from that point of view that the maintenance of a national dye industry became so important. Our statesmen should realise that fact, especially those who were looking for fresh sources of revenue. The Germans before the war exported in fine chemicals alone £97,500,000 worth, nearly double the total exports of coal and steel together. In estimating the importance of the British dyestuffs industry they must remember that it was in its infancy, and realise the tremendous possibilities that it held for the future. (Applause.)

### A Choice of Only Two Courses

MR. HAMER: The previous questions have elicited such instructive replies (hear, hear), that I venture to put a third, namely, "From the point of view of national policy is it not the fact that this country has a choice of only two courses—either to prosecute the development of our own dyestuffs industry until it is equal to all home and Empire demands, or frankly to surrender to German competition and revert to the pre-war position of dependence on Germany for essential supplies?" What I have in mind is this—if the opponents of the British dyestuffs industry honestly desire to eliminate defects, to accelerate and cheapen production, and to improve quality, all these may be very worthy objects, but if the real purpose is to discredit the home industry



and to destroy it by subjecting it at this early stage to unrestricted German competition, then the real purpose should be made clear to the public and not masked under other pretences.

**SIR WILLIAM ALEXANDER:** This question is of such fundamental importance that one would like, if time permitted, to say a great deal about it. It must suffice, however, to say that the answer is undoubtedly "Yes." The difference is between a short-sighted and a long-sighted policy. There is no doubt at all that we ought to establish this industry and take a long-sighted view.

In reply to a question from another speaker as to the openings for young men in the dyestuff industry **THE CHAIRMAN** said that the industry offered the best possible chances to young men, especially to young chemists.

#### Major Holliday's Tribute

In proposing a vote of thanks to the chairman, **MAJOR HOLLIDAY** said that as a competitor he would like to pay Sir William Alexander this compliment. He for one firmly believed that under his guidance the industry would ultimately achieve everything that was expected of it in this country.

In returning thanks **SIR WILLIAM ALEXANDER** said that in a worrying job such as this it was very gratifying indeed to hear, especially from a competitor in trade, such flattering remarks as those of Major Holliday. One man could do very little; the success or failure of the industry depended on the assistance he obtained. Once they instilled into an organisation the right spirit and had all working together for success, the job became simple. The staff were pulling together splendidly, but it was disheartening, when they were dealing with difficulties and striving to make good against time, to have so many unsympathetic people around them. They were not afraid of that, and he would say to all concerned, whether as users or from the point of view of national security and patriotism, "For God's sake give us a fighting chance." (Applause.)

## Safeguarding of Industries

### Chemical Traders' Fighting Campaign

A LARGELY attended meeting of subscribers to the Chemical Merchants' and Users' National Vigilance Committee and others interested was held at 97, Cannon Street, London, on Wednesday, April 5, Mr. Victor Blagden presiding.

**THE CHAIRMAN** stated that the Vigilance Committee was formed in November last with a view to protecting trade interests from the effects of the Key Industries Act. Whilst, as Englishmen, they were prepared to support any Government measure which would safeguard this country from enemy attack, they could not agree tacitly to accept a measure which, whilst protecting a few people, had the effect of injuring a large number. But almost worse than the actual Act was its administration. He believed that as a Committee they could say that they had already achieved great things. They had won every case contested, but they must fight the next few cases if they were to be successful in finally beating the Board of Trade, and they must also continue propaganda work to obtain, if possible, the repeal of the Act.

**MR. ERNEST J. PARRY**, in reviewing the work of the Committee, said it was formed primarily with the object, not of combating the principle of the safeguarding of industries itself, with which, nevertheless, all of them were probably not in sympathy, but with the object of combating the administration of the Act by the Board of Trade. Up to the moment the only attempts to contest the list which had been successful were those which had been approved and assisted by that Committee. The first was the santonine case. The decision in that case utterly nonplussed the Board of Trade. This was followed by the cream of tartar case. The result was that the Referee decided that cream of tartar, tartaric acid and citric acid were improperly included in the list and were accordingly deleted. The case of sugar of milk only lasted one day, and that substance had also been removed from the list. Nothing could succeed in making the repeal of the Act by Parliament more possible than the energetic and successful action taken by the Committee in those cases submitted to the Referee. The Committee had victory in its grasp so far as the list of dutiable articles was concerned, and they must continue to fight.

### The Merchant Point of View

**MR. FRED. T. REYNOLDS** proposed the following resolution: "This meeting of representatives of trades directly affected by the operations of the Dyestuffs (Import Regulation) Act and the Safeguarding of Industries Act is of the opinion that these Acts have not only failed to achieve the results the promoters anticipated, but have caused grievous inconvenience, great uncertainty, vexatious delays and much loss of time, money and prestige and, as the continuance of these Acts threatens to jeopardise and divert trade vital to national interests and increase rather than lessen unemployment, the early repeal of both Acts is demanded."

After several years of strenuous effort in grappling with official minds and methods he was, he said, getting rather tired of fighting at a time when traders generally should be reaping and gleaning. Importers, exporters, merchants and traders had all been practically at one in their antagonistic attitude towards the Safeguarding and Dyestuffs Acts, and had expressed their opinions by way of protests and provision of funds, and in some cases by transferring part of their business to the Continent. He submitted that it must be a wrong policy which made it desirable for British traders to place business abroad rather than trade from the United Kingdom as their base. They had further evidence of the working of these Acts in the remarkable fact that cloth and yarn were being sent from this country to the Continent to have the advantage of cheap chemicals and of dyes that it was illegal to import into this country. The interests of traders, importers, exporters and users were identical. The Colour Users' Association had recognised this patent fact and they ought to be now all working together. They all benefited by plentiful supplies at the lowest possible price, and in that respect they were all in agreement as to the interdependence of the separate interests. The users had thought that they could perhaps exercise more influence by taking separate action instead of joining forces with the Committee, but they had given a certain measure of support, for which, he thought, they had reason to be gratified by the results achieved. He believed that in the end they would all be pulling together because the logic of it would make it necessary for all interests who were prejudiced to come together and fight for freedom in trade. He wished vigorously to endorse the appeal which had been made that everyone should come to the assistance of the Committee so that the work could be continued.

In his opinion, the Dyestuffs Act had accomplished little good and a great deal of harm. The Safeguarding of Industries Act had accomplished no good and it was all bad. Far too much power was placed in the hands of minor officials at the Board of Trade and the Customs. With the best of intentions irreparable harm could be done by inexperienced men interfering with highly technical matters. They had all had experiences of delays and inconsistencies in connexion with the Customs, and the blame could be rightly laid upon the politicians responsible for the passing of the two Acts, but the conception and administration of the Acts were chiefly the work of irresponsible and inexperienced men at the Board of Trade. The traders of this country had been acquainted by actual experience with several forms of Government. In the past they had had Government by autocracy, plutocracy, and democracy. At the present time they had largely Government by bureaucracy. What they had most to fear was a new "ocracy"—Government by idiocracy.

The resolution was seconded by **MR. R. BROOKE** (British Xylonite Co. Ltd.), and carried unanimously.

**MR. JAMES D. KILEY**, M.P., in supporting the resolution, said that they were all interested in British enterprise and were anxious to back it up to the fullest extent, but when they came to consider the administration of the Act they were obliged to differ from the means adopted. Although they could not at the moment secure the repeal of the Act, the more powder and shot they poured into its administration the more likely would be its subsequent repeal.

### Safeguarding of Industries Inquiry

THE inquiry into whether or not a duty should be imposed on synthetic camphor imported into this country (a report of which appeared in *THE CHEMICAL AGE* last week), which should have been resumed on Friday, April 7, has been postponed owing to the indisposition of the Referee, **MR. CYRIL ATKINSON**, K.C. A date for the further hearing will be fixed after Easter.

### Society of Public Analysts

At an ordinary meeting on Wednesday, April 5, held at the Chemical Society's Rooms, Burlington House, London (Mr. P. A. Ellis Richards, president, in the chair), a certificate was read for the first time in favour of:—Mr. Frederick Major, B.Sc. (Lond.), A.I.C. Certificates were read for the second time in favour of Messrs. William John Agnew, B.A. (R.U.I.), Arthur Thomas Etheridge, M.B.E., B.Sc. (Lond.), F.I.C., Reginald Ernest Essery, B.Sc. (Bristol), A.I.C., George Girvan Herbert, A.I.C., George Lewis Hutchison, B.Sc. (Lond.), F.I.C. The following were elected members: Honorary Member: Sir Robert Robertson, K.B.E., F.R.S. Ordinary Members: Messrs. Reginald Norman Colgate, D.Sc. (Lond.), F.I.C., Frederick Norman Appleyard, A.I.C., Harold James Foster, Hammersley David George Holt, B.A. (Cantab.), Shozaeon Keimatsu, James Miller, F.I.C.

#### Abstract of Papers

A paper on "The Constants of Indian Beeswax," by O. D. Roberts, F.I.C., and H. T. Islip, A.I.C., dealt with the examination of a number of samples of beeswaxes collected in Bengal and Eastern Bengal and Assam under the supervision of district officers. The authors showed that the constants of many of these samples differed very appreciably from those previously recorded for genuine samples of Indian beeswax.

A "Note on the Liver Oil of the Tope" (Galeus galeus) was submitted by A. Chaston Chapman, F.R.S., F.I.C. The author had prepared and examined the liver oil of the tope, a fish belonging to the shark family, and gave the analytical data which he had obtained.

In another note by the same author on "The examination of foods for the presence of sulphites," it was pointed out that in the examination of food products for the presence of sulphurous acid or sulphites by the method usually adopted, somewhat heavy indications might be obtained in the case of products to which no sulphite had been added. He found that where such products had been flavoured with or contained substances such as onions or mustard which yielded on distillation organic sulphur-containing compounds, the sulphur in such compounds might be wholly or partly oxidised by the bromide water to sulphuric acid, and the analyst might in consequence be led wrongly to infer the presence of added sulphites. In such cases a differentiation between sulphurous acid and organic sulphur compounds might usually be made by substituting hydrogen peroxide for bromine or iodine in the distillation process.

In a demonstration of "Artificial Daylight for Laboratory Purposes" (Sheringham System), by Sydney H. Groom, B.A., the exhibitor gave a demonstration to show how the attachment so adjusted the rays from an ordinary gas-filled electric globe as to give a light by which colours had the same value as when viewed by daylight, and suggested how indicators, unworkable by artificial light, might be operated with this corrected illuminant.

In a paper on "Certain Tropical Oilseeds," by E. R. Bolton, F.I.C., and D. G. Hewer, B.Sc., the authors described the following nuts and seeds, with suggestions as to the uses of the fats and oils they contain, analytical data being given in each case: *Platonia insignis*, *Andirobinha*, *Baillonella* sp., species of *Parinari* seeds, *Theobroma grandifolia*, and *Theobroma bicolor*.

#### Affairs of Ascott's Drug Stores

A SITTING for the public examination of George Theophilus Ascott, trading as Ascott's Drug Stores, 13, Prince of Wales Road, Kentish Town, London, was appointed to be held at the London Bankruptcy Court on April 5 by Mr. Registrar Mellor. A statement of the debtor's affairs had been filed showing liabilities, £4,733 13s. 6d., and estimated assets, £372 7s. 9d. Mr. W. P. Bowyer, Senior Official Receiver, attended, and said that the statement of affairs had only just been filed, and he had had no opportunity of issuing to creditors the usual observations. Upon his application an adjournment of the examination until May 24 was ordered. The creditors include: British Drug Houses, Ltd., London, £10; W. J. Bush & Co., Ltd., London, £32; Duncan Doring, Ltd., London, £12; Erasmic Co., Warrington, £37; Grossmith & Co., Ltd., London, £34; Harker, Stagg, & Morgan, Ltd., London, £34; Johnson & Sons, Ltd., London, £100; B. Laporte, Ltd., Luton, £26; McClintons, Ltd., Donaghmore, £26; Old Strand Chemical Trading Co., London, £23; Palmolive Co., Ltd., London, £38; United Kingdom Chemical Co., Glasgow, £39; Veno Drug Co., Ltd., Manchester, £100; Watson & Sons, Ltd., London, £39.

#### Investments in a Paint and Chemical Company

MR. C. BATEMAN HANBURY, late of Curzon Street, London, W., who had been interested in the Hardfast Paint and Chemical Co., Ltd., attended before Mr. Registrar Francke at the London Bankruptcy Court on March 31 for his public examination on a statement of affairs in which he had returned his liabilities at £209,106, expected to rank for dividend, and his assets at £14,027 net. He stated, in reply to the Official Receiver, that the company was formed in December, 1919, with a capital of £75,000, and was promoted with the object of acquiring the business of a paint and chemical manufacturer carried on in Stepney. He had acted as a director of the company until the date of the receiving order against his estate. He placed no value on his shares. He had also acted as a director until the same date of another company called Anglian Foods Ltd., which was formed in April, 1920, for the purpose of exploiting a registered process for making cattle foods. He estimated his loss in that connexion at £8,900. The debtor attributed his insolvency to losses amounting to some £138,000 incurred through speculations, to losses incurred in connexion with properties in which he had dealt, to losses in connexion with sundry companies in the formation of which he had assisted, to the stringency of financial conditions, and to heavy interest and law costs. His Honour ordered the examination to be concluded.

#### Affairs of the Keene Co.

SITTING as bankruptcy judge in the Chancery Division on Monday, Mr. Justice Astbury was asked by Mr. E. W. Hansell, on behalf of the bankruptcy trustee, to make an order for the committal of Mr. Irving Alexander Keene, who had carried on business as the Keene Co. in Gray's Inn Road, London (see THE CHEMICAL AGE, Vol. V., p. 572, and Vol. VI., pp. 150 and 460). Mr. Hansell said Mr. Keene had refused to disclose or even write down the formulæ relating to his cold and corn cures and a razor paste. An offer had been received by the trustee for the sale of these assets, but in view of Mr. Keene's attitude the sale could not be completed. Mr. Beyfus said Mr. Keene's refusal had been based on his advice. Mr. Keene had no objection to disclosing one formula, but he submitted that he was not bound to give the other information. There was an agreement of twenty-five years' standing with his brother that neither should make public the formulæ in question. Mr. Keene was perfectly willing to give any information in law which he was compelled to give. Mr. Justice Astbury said there would be an order to disclose the formulæ in writing, fully and fairly, to the trustee, but the operation of the order would be stayed for fourteen days to provide an opportunity of appealing.

#### Failure of an Oil-Extraction Process

A SITTING was held in the Bankruptcy Court on April 5 before Mr. Registrar Hope, for the public examination of Lilian Gertrude Frolich de Moretti, described in the receiving order as the Countess de Moretti, who was adjudged bankrupt on February 16 last. In answer to Mr. W. P. Bowyer, Senior Official Receiver, the bankrupt said that in October, 1919, she went to Ceylon with her husband, and was afterwards engaged on a process which she had invented for extracting oil from coconuts. The process was patented and protected in Ceylon, and she spent a considerable sum on its development. In February, 1921, she returned to England to obtain financial assistance to exploit the process, but her efforts were unsuccessful, and in September last she sold her rights for £400. The examination was concluded. A statement of the bankrupt's affairs showed one unsecured liability of £361 for money advanced, and no assets.

#### End of the Brunner, Mond Litigation

IN the Court of Appeal on Monday, before Lords Justices Bankes, Scrutton, and Atkin, Brunner, Mond & Co., Ltd., and other traders appealed against the decisions of Mr. Justice Sankey in favour of the Manchester Ship Canal Co. It will be recollected that the Canal Co. had claimed from the appellants tolls and dues for vessels using the canal in November and December, 1917. The defence was that the Canal Co. had failed to scour the approach to the Weston Mersey lock as prescribed by the Act of 1885. The appellants now claimed a declaration to that effect and damages. The appeals were dismissed with costs, Lord Justice Atkin dissenting. Lord Justice Scrutton remarked that the litigation must have cost the parties at least £100,000.



## First Appeal under Safeguarding Act Referee's Decision Upheld

In the King's Bench Division on Friday, April 7, before the Lord Chief Justice, Mr. Justice Sankey and Mr. Justice Greer a special case under sec. 19 of the Arbitration Act, 1889, raised an important point under the Safeguarding of Industries Act. The matter arose out of an arbitration between the Board of Trade and the Incandescent Mantle Manufacturers' Association, the latter contending that gas mantles should be included in the schedule of articles which, when imported, were subject to duty. They asserted that the arbitrator should have defined goods on which duty was to be levied, and complained that he had not done so.

### Judgment

In giving judgment, the Lord Chief Justice said that the case arose under sec. 1, sub-sec. 5, of the Safeguarding of Industries Act. In pursuance of the provisions of that Act a referee was appointed by the Lord Chancellor on October 18, 1921, and, some time later, after the passing of the Act and before December 3, 1921, the Incandescent Mantle Manufacturers' Association complained that incandescent gas mantles were improperly excluded from the list, and they claimed a declaration accordingly, and that the list should be amended by the inclusion therein of incandescent gas mantles among the compounds thorium, cerium, &c. The question, therefore, and the only question which was submitted to the learned referee, was whether in the appropriate list the phrase "incandescent gas mantles" ought to be added. A long discussion appeared to have taken place, and in the result a consultative case for the opinion of the court had been stated by the learned referee.

The first question which it raised was whether the referee had any power to alter the words which he then directed to be added to the list, or whether he was *functus officio*. Apparently, on December 10, he had read from a rough draft a part of what he then described as his judgment. Nothing could more clearly show than the discussion that day that the judgment contained at least one very ambiguous passage, and it was evident that he did not decide upon the spot. He (the Lord Chief Justice) did not think that the learned referee was then *functus officio*; and he thought, therefore, that the referee had power to alter the words which did not in his mind correctly give effect to his conclusion. The answer to the first question would therefore be in the affirmative.

With regard to the subsequent questions, the learned referee expressed the view that he ought not to state a case or ask certain questions which he mentioned. His view was based upon what he thought were the intentions of the Legislature, and he asked the court whether his discretion might be exercised properly by refusing to submit the questions for the consideration of the court. In regard to one of them it might be said that it did raise a question of law. That being so, and the request having been made for a case to be stated upon that point, it was clear that the referee was right in stating the case upon it. The question was before them, and he (his Lordship) answered it in the negative. It was, whether, upon his findings of fact, the referee should have decided that incandescent gas mantles were articles improperly excluded from the Board of Trade list. It was well within the functions of the referee to refuse to include incandescent gas mantles.

The question arose in the last paragraph but one of the schedule to the statute. His Lordship said that it was an enumeration of the goods chargeable with duty, and the question was whether incandescent gas mantles ought to be specifically named in a definition of compounds of thorium and cerium. Mr. Terrell had argued that compounds in that schedule meant the same thing as compound articles in sec. 1, sub-sec. 4. He could not take that view. He thought that in order to see the meaning of compounds in the paragraph of the schedule it was necessary to look at the context, which clearly indicated a contrast between manufactured products on the one hand and compounds on the other. The compounds of thorium and cerium, and so forth, were substances made up of thorium, cerium, and the rest; they were not manufactured articles which contained thorium, cerium, and the rest. But, however that might be, whether the construction of the paragraph of the schedule was exhaustive or not, it was quite open to the referee on the facts of this case to refuse to include incandescent gas mantles in the Board of Trade list.

There remained three further questions, but they did not really arise. The referee was invited to consider, aye or no,

whether incandescent gas mantles were or were not properly excluded, but he was not invited to consider whether, in the alternative, certain other things not named in the notice of complaint were properly excluded. The referee could say that he was of opinion that the mantles were properly excluded, he was not bound to entertain ingenious alternatives not raised by the case.

The other judges agreed.

### Corrections in Safeguarding List

THE following corrections in the Lists of Articles chargeable with duty under Part I. of the Safeguarding of Industries Act—as issued by the Board of Trade in September, 1921—are notified for general information, and will be embodied in the next reprint of the list:—

- |                        |  |
|------------------------|--|
| Page 16 .. ..          | Replace "Acid acetic, 80 per cent. grade or higher" by "Acid acetic glacial."              |
| Page 18 .....          | Delete Acid gallic.  |
| Pages 18 and 20 .....  | Delete Acid tannic and Acid gallotannic.   |
| Page 22 .....          | Delete Alum chrome and chrome alum.  |
| Page 23 .....          | Delete Aluminium sulphocyanide and Aluminium thiocyanate.                                  |
| Page 25 .....          | Delete R Anthracene.   |
| Page 25 .....          | Delete Antimony fluoride.  |
| Pages 25, 58, 67 ..... | Delete Antimony potassium tartrate, Potassium antimony tartrate, and Tartar emetic.        |
| Page 27 .....          | Delete Barium chlorate.  |
| Page 27 .....          | Delete R Barium peroxide.  |
| Page 27 .....          | Delete Barium sulphocyanide and Barium thiocyanate.  |
| Page 31 .....          | Delete R Calcium biphosphate.  |
| Page 31 .....          | Delete Calcium ferrocyanide.   |
| Page 33 .....          | Delete Chromium oxide.   |
| Page 34 .....          | Delete Chromium sulphate.  |
| Page 35 .....          | Delete Copper sulphocyanide and thiocyanate.   |
| Page 44 .....          | Delete Hydrogen peroxide.  |
| Page 49 .....          | Delete Magnesium silicofluoride.   |
| Page 50 .....          | Delete Mercury oxide.  |
| Page 53 .....          | Delete R Naphthalene.  |
| Page 55 .....          | Delete Oeuanthic ether.  |
| Page 56 .....          | Delete Phenalgine.   |
| Page 58 .....          | Delete Pinene.   |
| Page 59 .....          | Delete Potassium perchlorate.  |
| Page 64 .....          | Delete Sodium chromate.  |
| Page 65 .....          | Delete Sodium perborate.   |
| Page 65 .....          | Delete Sodium perchlorate.   |
| Page 65 .....          | Delete Sodium permanganate.  |
| Page 66 .....          | Delete Sodium silicofluoride.  |
| Page 69 .....          | Delete Tin oxide.  |
| Page 24 .....          | Insert prefix R before "Ammonium Phosphate."   |
| Page 35 .....          | Insert prefix R before "Copper Oxide."   |
| Page 43 .....          | Insert prefix R before "Haematoxylin."   |
| Page 51 .....          | Insert prefix R before "Methylethylketone."  |
| Page 58 .....          | Insert prefix R before "Potassium Bisulphite."   |
| Page 59 .....          | Insert prefix R before "Potassium Permanganate."   |
| Page 64 .....          | Insert prefix R before "Sodium Acetate."   |
| Page 65 .....          | Insert prefix R before "Sodium Phosphate, tri."  |
| Page 69 .....          | Insert prefix R before "Titanium Oxide."   |
| Page 32 .....          | For "R Calcium phosphates" read "R Calcium phosphates (other than R Calcium biphosphate)." |
| Page 29 .....          | For "Bornyl propionate" read "Bornyl propionate."  |

### Atomic Weight of Chlorine

As the result of researches undertaken by Dr. F. W. Aston, it is known that ordinary chlorine, atomic weight 35.46, is a mixture of two isotopes of atomic weights 35 and 37. The constancy of the ratio has been proved in regard to chlorine obtained from minerals deposited by sea-water. The possibility that the ratio may differ in the case of chlorine arising from primary minerals not deposited from sea-water was investigated by E. G. Gleditsch and B. Samdahl, whose experiments were described in *Comptes rendus*, of March 13. It appears that the authors prepared salt from an apatite (calcium chlorofluophosphate) found in primary rocks, and after careful purification from fluorine, bromine, and iodine, found the atomic weight of the chlorine to be 35.49, 35.45, 35.46, the same as that of ordinary chlorine. Hence at the time of the formation of the minerals of the primary magma, the two chlorine isotopes were in the same ratio as at the present time.



## Chemical Matters in Parliament

### Duty on Acetone

Answering Major M. Wood (House of Commons, April 3), Mr. Baldwin said he was aware that acetone for industrial purposes was manufactured by two distinct processes, viz., from acetate of lime and by a fermentation process. The practicability of determinative tests of origin was under consideration, but should these be shown to be non-existent, the liability or non-liability of imported acetone to duty must be determined by such declaration by the importer as the Customs might deem sufficient.

### Import of German Dyes

Mr. Kiley (House of Commons, April 6) asked the President of the Board of Trade if he was aware that licences to import special German dyes were withheld on the grounds that such German dyes were available in this country and that such persons requiring licences must purchase these first; and whether he had sanctioned this prohibition.

Sir P. Lloyd-Greame said he was aware that licences were not granted for the importation of German dyestuffs when there were in this country stocks of the same dyestuffs available to the applicants; and he saw no reason why licences should be granted in such circumstances.

### Safeguarding Act Repeal Bill

Mr. Alexander Shaw (House of Commons, April 7) moved the second reading of the Safeguarding of Industries Act, 1921 (Repeal) Bill. Mr. Shaw, who had only two minutes left in which to speak, said he was told that the President of the Board of Trade had been prepared to speak on the Bill for over an hour had the occasion arisen. Mr. Baldwin had never shown any indecent enthusiasm over the Act itself, although it was true that he had endeavoured to administer it with scrupulous fairness. He had done his best with an absolutely impossible measure.

As it was then four o'clock, the debate stood adjourned, and the further consideration of the measure was put down for May 5.

### Reparation Dyes

Mr. Baldwin informed Mr. Lyle-Samuel (House of Commons, April 10) that he was unable to state separately the value of reparation dyes received from the Germans during the year 1920-21, but the total value of reparation dyes received from December, 1919, to March 31, 1921, was £549,094, and the amount realised from sales during that period was £380,062. The dyes were all sold through the Central Importing Agency, who were paid a commission, to include expenses, of 3½ per cent. on the amount realised.

### Safeguarding Act Complaints

Mr. Baldwin stated in reply to Colonel P. Williams (House of Commons, April 10), that the total number of formal complaints under Sec. 1 (5) of the Safeguarding of Industries Act, received up to December 17 was 540, (the latest date for receiving complaints). This number included complaints as to both inclusions in and exclusions from the Board of Trade's list. A large proportion of these were not likely to be proceeded with, and a number had already been withdrawn.

### Dyestuffs (Import Regulation) Act

Replying to Mr. Kiley, Mr. Baldwin (House of Commons, April 10) said he was aware of a resolution passed by the Chemical Merchants' and Users' National Vigilance Committee demanding the early repeal of the Dyestuffs and Safeguarding of Industries Acts. He did not accept any of the propositions laid down in that resolution, and he did not propose to take any action in the matter.

### British-made Chemicals

In reply to Mr. Mosley, who asked how many of the commodities liable to duty under Part I. of the Safeguarding of Industries Act which were not manufactured here prior to the passage of the Act, were now being made in this country, Mr. Baldwin (House of Commons, April 10) said that although he could not at the moment give detailed information, very substantial progress had been made in those branches of the chemical industry comprised within the chemical heading of the schedule, and this progress applied to the greater number of items in that part of the list.

### Synthetic Camphor Inquiry

In reply to Major Barnes (House of Commons, April 10), Mr. Baldwin said the Board of Trade had briefed one junior counsel in the synthetic camphor inquiry. He was unable to make any statement as to the costs incurred by the Board of Trade in this case, but he understood they would probably be small.

### British Traders and South America

To the Editor of THE CHEMICAL AGE

SIR,—As members of a committee which has raised £25,000 towards the cost of British participation in the forthcoming international exhibition to open at Rio de Janeiro on September 7 next, we ask for the hospitality of your columns to emphasise the need for making the British section truly representative of all that is best in British industries. We appeal to manufacturers and merchants who possess or hope to secure connexion with Brazil and South America generally to regard this as an occasion of unique historic interest to Brazil, with whom during the last 100 years and more this country has maintained the most friendly relations alike in the sphere of politics and trade.

Every advantage will be taken of this opportunity by other nations whose competition is formidable in this market. The absence on an occasion of this kind of British firms whose names are household words in South America would, therefore, be as damaging to their interests as to the national reputation.

The site allotted for the British building is one of the best in the whole exhibition, and we are informed from Brazil that the work in its construction is well in advance of that done by other nations. All that is necessary to insure the complete success of the British section is that British commercial and industrial firms should consider their own ultimate interests and those of this country by maintaining our position in the eyes of the Brazilian people and Government, our friends and allies, whose independence for one hundred years is about to be celebrated. Any applications made to New Court, St. Swithin's Lane, E.C. 4, will receive attention.—Yours, &c.,

LIONEL DE ROTHSCHILD, BESSBOROUGH, E. GORE BROWN,  
ARTHUR COOK, EDWARD GREENE, W. DOURO HOARE,  
FOLLETT HOLT, C. E. JOHNSTON, E. R. PEACOCK,  
C. D. SIMMONS, J. O. UNWIN.

April 5th, 1922.

### The Pasteur Memorial

To the Editor of THE CHEMICAL AGE

SIR,—I am desired by my President, Mr. A. Chaston Chapman, F.R.S., to revert to the announcement regarding the Pasteur Centenary forwarded to you recently, and to inform you that he has heard from the French Committee that contributions to the proposed memorial statue, to be erected at Strassbourg, *should be sent, not later than 30th June next*, to the General Secretary and Treasurer, Th. Hering, 6, Rue des Veaux, Strassbourg, or to Mr. A. Chaston Chapman, F.R.S., President of the Institute of Chemistry, 30, Russell Square, London, W.C. 1.—Yours, &c., RICHARD B. PILCHER,  
Registrar and Secretary.

April 11.

### Contracts Open

TENDERS are invited for the supply of the following materials. The latest date for receiving tenders is given in parentheses:

MELBOURNE (Australia).—(May 23.) Ammonium chloride. Particulars from the Department of Overseas Trade (Room 50), 35, Old Queen Street, London.

FAVERSHAM.—(April 18.) 17,000 gallons dehydrated tar. Particulars from and tenders to District Surveyor, Ashford Road, Faversham.

PADDINGTON.—(April 24.) Disinfectants, lime, cement, oils, greases, &c.; tar, creosote oil, and pitch. Forms from Borough Surveyor and tenders to A. W. J. Russell, Town Hall, Paddington.

EDMONTON.—(April 20.) Disinfectants. Forms from and tenders to E. Ridley, 77, Bridport Road, Edmonton.

HOLLAND.—(Immediate delivery.) 70,000 kilos Chile salt-petre, 15,000 kilos superphosphate. Particulars from P. V. Schouwe, Oude Tonge (South Holland). 78,000 kilos Chile saltpetre, 15½ per cent. in bales of 100 kilos (gross). Tenders to F. D. van Vessum, Vereeniging Landbouwbelaag, Bruinisse (Zealand).

## From Week to Week

THE SLAG PHOSPHATE CO., LTD., announce that their London offices are now at 42, Old Broad Street, London.

During February United Kingdom limited liability companies in the chemical industry INCREASED THEIR NOMINAL CAPITAL by £28,900.

According to Mr. T. M. Ainscough, H.M. Senior Trade Commissioner in India, there is a GOOD DEMAND in the country for British perfumes and essences.

A FACTORY erected recently by the Lightfoot Refrigerating Co. at Colombo is now said to be manufacturing 16,800 cub. ft. of oxygen a day for welding requirements.

Lever Brothers, Ltd. have opened NEW OFFICES in the Bigg Market, Newcastle. The premises will chiefly be utilised as a distributing centre for soap and margarine.

The death took place at Glasgow on April 6 of MR. PETER MACLACHLAN BENNIE, for twenty-seven years chief mechanical engineer to the Tharsis Sulphur and Copper Co., Ltd.

CONSIDERABLE DAMAGE to buildings and machinery was caused by fire on April 7 at the vulcanite factory of the North British Rubber Co., Ltd., Fountain Bridge, Edinburgh.

MR. J. F. RENWICK, who is leaving this country to take up a position with E. I. du Pont de Nemours & Co., Inc., has resigned his office as vice-president of the Royal Photographic Society.

THE NATIONAL UNION OF SCIENTIFIC WORKERS announces its willingness to endeavour to arrange with the Russian Commissary for Education for the exchange of scientific publications between men of science in Great Britain and Russia.

The authorities of the University of Wales have decided to confer the honorary degree of D.Sc. upon Dr. E. J. RUSSELL, F.R.S., for his eminence as an agricultural chemist. The ceremony will take place at the July meeting of the Council at Aberystwyth.

The following officers were elected at the ANNUAL MEETING on April 7, of the Liverpool Section of the Society of Chemical Industry: Chairman, Dr. G. C. Clayton; vice-chairman, Dr. E. F. Armstrong; hon. treasurer, Dr. A. Holt; hon. secretary, Mr. E. G. Jones.

A comparison of present prices with those ruling on October 1 last of a number of chemicals now manufactured in this country shows that there has been AN AVERAGE DECLINE in price of over 15 per cent., despite the 33½ per cent. duty imposed by the Safeguarding of Industries Act.

At the last monthly meeting of the General Committee of the British Chemical Trade Association, the president, Mr. Victor Blagden, on behalf of the members, presented the secretary, Mr. O. F. C. BROMFIELD, with an inlaid mahogany canteen of cutlery and a salver to mark the occasion of his recent marriage.

The fifteenth annual meeting of the BRITISH SCIENCE GUILD was held on April 6 at the Royal Society of Arts, London. Lord Avebury presided, in the absence of Lord Bledisloe. Mr. R. M. Walmsley referred to the publication of the Guild catalogue of scientific books, which, he said, contained over 6,000 entries.

At a meeting of members of the Council of the Birmingham Section of the BRITISH INDUSTRIES FAIR and the leading exhibitors last week it was proposed that the Fair at Castle Bromwich next year be held in May instead of early March; also that there be no standardising of stands; and that the public be admitted on two days at a small charge.

JOHN WALTER KNOWLES, manager of the works at Tipton at which an explosion occurred while the work of cartridge stripping was in progress, and resulted in the death of nineteen girls, has been admitted to bail, himself in £1,000 and sureties in a similar amount, pending the trial of the charge of manslaughter on which he has been committed to the Assizes.

In a paper on "Galicia and its Oil Industry," read on Tuesday at a meeting of the Institution of Petroleum Technologists, MR. ALBERT MILLER referred in detail to the Boryslaw-Tustanowice-Mraznica oilfield, where the most important progress had been made. Mr. Miller said the advantageous situation of the Galician oilfields, both from a prospecting and commercial point of view, was an enviable one.

THE COOPER & COOPER CHEMICAL CO., LTD., of 3, Laurence Pountney Hill, Cannon Street, London, announce that they have been appointed sole agents in the British Isles for Cortes

and de Seriere, Malaga, Spain, who are the owners of the mines from which the Cortes brand of Spanish oxides and ochres is produced. The company intend to hold stocks in London, Liverpool, Bristol, Hull, and Glasgow.

According to the preliminary figures relating to our OVERSEAS TRADE IN MARCH, the total imports were £87,879,424, and exports £64,580,793. A notable feature of the month's figures is the increase in imports of raw materials. Taking imports as a whole their value was within just over 6 per cent. of the figure for March, 1921, while the exports were only £2,228,168 less than those of the corresponding month last year.

AN OXYHYDRIC BLOWPIPE, the flame of which is claimed by the inventor, M. Eugene Royen, to be as effective under water as in the air, has been the subject of some satisfactory tests at Lyons. M. Royen cut through a piece of armoured plating 18 millimetres thick in 65 seconds, making a cut 17 centimetres long. He claims that divers will be able to carry the blowpipe under water and use it effectively on all kinds of submerged iron and steel plating.

AT A SPECIAL CONFERENCE of the workers' side of the Joint Industrial Council for the Chemical Trades, held in London on March 9, it was stated that investigations with a view to a settlement would continue for a few days. The South Wales strike is now in its sixth week, and threatens seriously to prejudice the tinsplate industry. The men express themselves as determined to resist the wage reductions, but it is hoped that the negotiations on foot will result in a settlement of the dispute before further damage is done.

A BILL to reduce the life of all future PATENTS GRANTED BY THE UNITED STATES GOVERNMENT from seventeen to five years has been introduced in the Senate. This limitation would prevail where the patentee failed to use the invention. The period would be further cut down to two years in cases where the patent was sold and not used. The purpose of the proposed legislation is to prevent corporations from buying patents and refusing to utilise them, thus killing possible competition and the development of improvements.

The agreement concluded between the French Government and the Badische Anilin u. Sodafabrik Co. was examined in the Senate on April 7, when the Director of Explosives and an agricultural expert explained the UTILISATION OF SYNTHETIC AMMONIA from the point of view of national defence and agriculture. The first article of a Bill whereby "the War Minister is authorised to put into practice the agreement concluded on November 11, 1919, between the Minister of Industrial Reconstruction and the Badische Co., concerning the production of synthetic ammonia," was approved.

THE CHEMICAL MERCHANTS' AND USERS' NATIONAL VIGILANCE COMMITTEE on April 6 adopted a resolution expressing the opinion that the Dyestuffs (Import Regulation) Act and the Safeguarding of Industries Act "have not only failed to achieve the results the promoters anticipated, but have caused grievous inconvenience, great uncertainty, vexatious delays, and much loss of time, money, and prestige, and as their continuance threatens to jeopardise and divert trade vital to national interests, and increase rather than lessen unemployment, the early repeal of both Acts is demanded."

The North-Western Counties Branch of the Free Trade Union has sent a letter to the heads of Government departments and the members of Parliament in the area asking for a pledge to vote FOR THE REPEAL of the Safeguarding of Industries Act and the Dyestuffs (Import Regulation) Act. "The former," says the letter, "has been shown by experience to be a measure of protection to a few British makers rather than a means of security to the nation. Both acts are exerting an evil influence on world-wide trade by provoking retaliation and helping to erect tariff walls, or to raise them still higher, and thus hindering commerce between the nations."

According to a new EXPLOSIVES MONOPOLY BILL introduced by the Netherlands Government, the monopoly will be limited to the manufacture of certain explosives and will therefore not include the importation and sale thereof. The Government state in the memorandum explaining the Bill that they trust the privately-owned coal mines will place their orders for explosives with the Dutch explosives company, having regard to the importance to them of having an explosives factory in the Netherlands in circumstances under which the supply from abroad is not guaranteed. The new agreement between the State and the company does not lay down any rules regarding the computation of prices beyond stipulating that the monopolised explosives must be supplied at reasonable prices.

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## References to Current Literature

## British

- THALLIUM COMPOUNDS.** Organo-derivatives of thallium. Part V. The preparation of thallium diaryl salts. A. E. Goddard and D. Goddard. *Chem. Soc. Trans.*, March, 1922, pp. 482-488.
- Studies on thallium compounds. Part I. Analytical. A. J. Berry. *Chem. Soc. Trans.*, March, 1922, pp. 394-399.
- ELEMENTS.** Artificial disintegration of the elements. E. Rutherford. *Chem. Soc. Trans.*, March, 1922, pp. 400-415.
- VALENCY.** An explanation of the property of induced polarity of atoms and an interpretation of the theory of partial valencies on an electronic basis. W. O. Kermack and R. Robinson. *Chem. Soc. Trans.*, March, 1922, pp. 427-440.
- A theoretical derivation of the principle of induced alternate polarities. A. Lapworth. *Chem. Soc. Trans.*, March, 1922, pp. 416-427.
- COMBUSTION.** The combustion of complex gaseous mixtures. W. Payman and R. V. Wheeler. *Chem. Soc. Trans.*, March, 1922, pp. 363-379.
- WAX.** The composition of paraffin wax. Part I. F. Francis. *Chem. Soc. Trans.*, March, 1922, pp. 496-513.
- NITRO COMPOUNDS.** The nitration of *m*-nitrotoluene. O. L. Brady. *Chem. Soc. Trans.*, March, 1922, pp. 328-331.
- The influence of nitro-groups on the reactivity of substituents in the benzene nucleus. Part V. Hetero-nuclear dinitro-derivatives. H. Burton and J. Kenner. *Chem. Soc. Trans.*, March, 1922, pp. 489-496.
- The dinitrotoluidines. O. L. Brady, J. N. E. Day, and W. J. W. Rolt. *Chem. Soc. Trans.*, March, 1922, pp. 526-532.
- RUBBER.** Accelerators and rubber mixes. Part II. J. L. Rosenbaum. *Rubber Age*, April, 1922, pp. 80-85.
- Cold vulcanisation of rubber. S. J. Peachey. *Rubber Age*, April, 1922, pp. 61-66.
- LEATHER.** Chrome leather analysis. Part III. The extraction of oils and fats from chrome leather. D. Woodroffe. *J. Soc. Leather Trades' Chemists*, March, 1922, pp. 97-102.
- A new method for the determination of basicity figures of chrome liquors. Part I. D. Burton, A. Glover, and R. P. Wood. *J. Soc. Leather Trades' Chemists*, March, 1922, pp. 92-97.

## United States

- CATALYSIS.** Catalytic preparation of aniline. O. W. Brown and C. O. Henke. *J. Phys. Chem.*, February, 1922, pp. 161-190.
- Contributions to the study of ammonia catalysts. Part II. A. T. Larson and A. P. Brooks. *Chem. and Met. Eng.*, March 22, 1922, pp. 555-560.
- PHOTO-CHEMISTRY.** The action of ultraviolet-light on gels. E. O. Holmes, junr., and W. A. Patrick. *J. Phys. Chem.*, January, 1922, pp. 25-41.
- WATERPROOFING.** The waterproofing efficiency of some bi- and tri-valent salts of higher fatty acids and their adsorption by the fibres of paper. S. S. Bhatnagar. *J. Phys. Chem.*, January, 1922, pp. 61-71.
- ELECTRO-CHEMISTRY.** Electrolytic production of sodium perborate. P. C. Alsgaard. *J. Phys. Chem.*, February, 1922, pp. 137-155.
- The electrochemical behaviour of liquid sodium amalgams. T. W. Richards and J. B. Conant. *J. Amer. Chem. Soc.*, March, 1922, pp. 601-611.
- EXPLOSIVES.** The explosibility of ammonium nitrate. C. E. Munroe. *Chem. and Met. Eng.*, March 22, 1922, pp. 535-542.
- ACIDS.** The ammonio carbonic acids. E. C. Franklin. *J. Amer. Chem. Soc.*, March, 1922, pp. 486-509.
- Synthesis of amino acids in animal organisms. Part I. Synthesis of glycocoll and glutamine in the human organism. G. J. Shipley and C. P. Sherwin. *J. Amer. Chem. Soc.*, March, 1922, pp. 618-624.
- ORGANIC SULPHUR COMPOUNDS.** Sesqui-mustard gas or bis-*s*-chloro-ethyl ether of ethylene dithio-glycol. R. Rosen and E. E. Reid. *J. Amer. Chem. Soc.*, March, 1922, pp. 634-636.
- HYDROGEN.** Triatomic hydrogen. Part II. G. L. Wendt and R. S. Landauer. *J. Amer. Chem. Soc.*, March, 1922, pp. 510-521.

D

- REACTIONS.** The reaction between alkalis and certain nitro-cyclopropane derivatives. E. P. Kohler and L. I. Smith. *J. Amer. Chem. Soc.*, March, 1922, pp. 624-633.
- The action of nitrosyl chloride on normal heptane. E. V. Lynn and O. Hilton. *J. Amer. Chem. Soc.*, March, 1922, pp. 645-648.
- Trihalogen-methyl reactions. Part IV. Reaction of trichloroacetic acid with copper. H. W. Doughty and B. Freeman. *J. Amer. Chem. Soc.*, March, 1922, pp. 636-645.

## French

- PHOTO-CHEMISTRY.** Action of light on uranium salts. J. Aloy and E. Rodier. *Bull. Soc. Chim.*, March, 1922, pp. 246-249.
- CATALYSIS.** The catalytic decomposition of shark oil. A. Mailhe. *Bull. Soc. Chim.*, March, 1922, pp. 249-252.
- KETONES.** The dehydration of benzylhydrobenzoin; formation of triphenylacetone and diphenylindene. A. Orékhoff and M. Tiffeneau. *Bull. Soc. Chim.*, March, 1922, pp. 253-255.
- Some derivatives of anisic acetone. E. Le Brazidec. *Bull. Soc. Chim.*, March, 1922, pp. 255-265.
- Spontaneous condensation of ethoxyacetone; formation of the corresponding aldol. V. Daudel. *Bull. Soc. Chim.*, March, 1922, pp. 265-268.
- ACIDS.** The manufacture of sulphuric acid by the contact process. Part II. H. Braidy. *L'Ind. Chim.*, March, 1922, pp. 90-94.
- OILS.** Modern methods in the oil industry. Part II. G. Durocher. *L'Ind. Chim.*, March, 1922, pp. 100-103.
- WATER.** Treatment of industrial waste waters. A. Beltzer. *L'Ind. Chim.*, March, 1922, pp. 95-100.
- DYESTUFFS.** Cyclic structure and colour. P. Alexandre and J. Martinet. *Rev. gén. des Matières Colorantes*, February, 1922, pp. 17-22.
- DIAZO COMPOUNDS.** Diazo compounds. Part I. E. Noelting. *Rev. gén. des Matières Colorantes*, March, 1922, pp. 33-36.
- SOAP.** Solutions and sols; detergent action of soap. C. Gillet. *Rev. gén. des Matières Colorantes*; Part III, February, 1922, pp. 22-24; Part IV., March, 1922, pp. 39-43.

## German

- ALDEHYDES.** The preparation of aldehydes from acid chlorides. Part V. K. W. Rosenmund and F. Zetsche. *Ber.*, March 11, 1922, pp. 609-612.
- Synthesis and properties of some  $\delta$ -oxyaldehydes. B. Helferich and T. Malkomes. *Ber.*, March 11, 1922, pp. 702-708.
- ACIDS.** Synthesis of quinic acid. A. Kaufmann. *Ber.*, March 11, 1922, pp. 614-616.
- Diglycolic acid. R. Anschütz and S. Jaeger. *Ber.*, March 11, 1922, pp. 670-679.
- Disalicylic acid and its conversion into xanthone-4-carboxylic acid. R. Anschütz and W. Claasen. *Ber.*, March 11, 1922, pp. 680-689.
- Nitrosyl-selenic acid. J. Meyer and W. Wagner. *Ber.*, March 11, 1922, pp. 690-692.
- REACTIONS.** The action of tetranitro-methane on triphenylhydrazine. S. Goldschmidt and K. Renn. *Ber.*, March 11, 1922, pp. 644-647.
- The action of sodium bisulphate on nitro-compounds of the benzene series. H. Weil and E. Moser. *Ber.*, March 11, 1922, pp. 732-737.
- Studies in connexion with the Wurtz-Fittig synthesis. W. Fuchs and H. Metzl. *Ber.*, March 11, 1922, pp. 738-747.
- The action of sulphites on aromatic amino- and hydroxy-compounds. Part IX. The behaviour of 2,5,1-aminonaphtholsulphonic acid. (A acid). H. T. Bucherer and R. Wahl. *J. prakt. Chem.*, March, 1922, pp. 253-276.
- The action of sulphites on aromatic amino- and hydroxy-compounds. Part X. The behaviour of phenylhydrazinesulphite mixtures towards aminonaphtholsulphonic acids and azo dyestuffs in particular. H. T. Bucherer and W. Zimmermann. *J. prakt. Chem.*, March, 1922, pp. 277-315.

## Miscellaneous

- ORGANIC SULPHUR COMPOUNDS.** Sulphur as a bridging atom in the middle ring of some anthracene derivatives. Part I. A. Bistrzycki and B. Brenken. *Helv. Chim. Acta*, February, 1922, pp. 20-28.

## Patent Literature

### Abstracts of Complete Specifications

176,400. RECOVERY OF AMMONIA IN THE AMMONIA SODA PROCESS. E. W. Pattison, 51, Deansgate Arcade, Manchester. From Mathieson Alkali Works, Inc., 25, West 43rd Street, New York. Application date, September 3, 1920.

The object is to recover the fixed ammonia from the ammonium chloride produced in the ammonia soda process, without the production of large quantities of calcium chloride as a waste by-product. The ammonium chloride is decomposed by means of the sulphide of an alkaline earth metal to form ammonium sulphide and a chloride of the alkaline earth. The ammonium sulphide is then treated with an alkali to liberate ammonia, and the alkali sulphide remaining is a marketable product. The sulphide used is preferably barium sulphide obtained by lixiviating the black ash of crude barium sulphide. The apparatus used is similar to the lime section and heater of an ammonia soda process still. The liquor from the sodium bicarbonate filters is fed into the heater and the free ammonia gas is driven off. The ammonium chloride passes into the distilling section, and is treated with barium sulphide, liberating ammonium sulphide, while the barium chloride, with sodium chloride as an impurity, is drawn off. This liquor is then treated with hydrochloric acid to convert any excess of barium sulphide into chloride, or with carbon dioxide to convert the sulphide into carbonate. The mixture of barium chloride and sodium chloride is separated by fractional crystallisation. It is preferred to use an excess of the ammonium chloride liquor in the process, rather than excess of barium sulphide, the residue being returned to the process. If the ammonium chloride liquor is first crystallised to obtain a purer ammonium chloride as the starting material, the barium chloride finally obtained is free from sodium chloride. The ammonium sulphide gas is absorbed in caustic soda to obtain sodium sulphide, which is afterwards crystallised out. The operation is better controlled if a smaller proportion of caustic soda is used, so that some sodium hydrosulphide and ammonia are formed. The hydrosulphide is subsequently converted into sulphide by adding caustic soda in the receiving tank.

176,420. CELLULOSE DERIVATIVES, MANUFACTURE OF. H. Dreyfus, 8, Waterloo Place, London, S.W. 1. Application date, October 6, 1920.

The process is for manufacturing alkyl or aralkyl ethers of cellulose from cellulose or its conversion products such as mercerised cellulose not soluble in alkali. Such a process was described in specifications 164,374-5-7 (See THE CHEMICAL AGE, Vol. V., p. 75.) The cellulose or conversion product is ground with a portion of the alkali in powdered form in the presence of an inert, non-aqueous liquid or diluent such as benzol, toluol, carbon tetrachloride, ether, ligroin or benzene. The product is then treated with the etherifying agent such as diethyl or dimethyl sulphate, benzyl chloride, &c., in the presence of a diluent. In all cases, the proportion of water present is preferably not more than 1.5 times that of the cellulose.

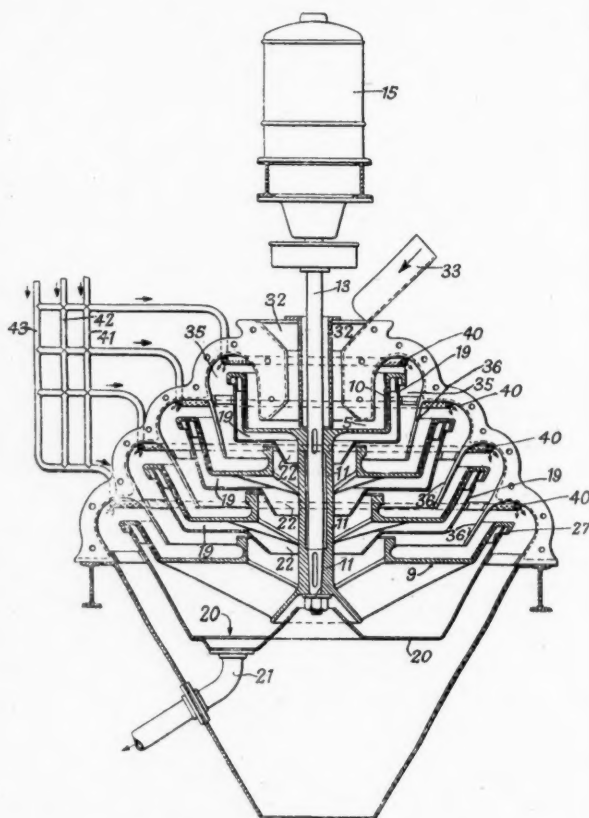
176,428. TUNGSTEN ORES AND RESIDUES CONTAINING OXIDE OF TUNGSTEN, PURIFICATION OF. W. H. Dyson, Ringwood, Normandy, near Guildford, and L. Aitchison, New Eldon Chambers, 46, Cherry Street, Birmingham. Application dates, October 28, 1920, and July 27, 1921.

The tungsten-bearing material is subjected to the action of free chlorine and/or hydrochloric acid gas at such a temperature that one or more of the metals is converted into a chloride which is volatile at that temperature. Hydrogen may also be present in some cases. If the nature of the halogen gas or the temperature be varied, the metals may be separated by a selective formation and distillation of their halogen derivatives. The most suitable conditions for the process vary with the nature of the material, and are determined by experiment. If the raw material is mainly tungstic oxide, it may be volatilised with a mixture of chlorine and hydrochloric acid gas at 600°C., but with wolframite a temperature of 1000°C. is necessary. In an example, crushed wolframite is heated to 600°C. in a furnace with an acid-proof lining, and treated with a mixture of equal volumes

of chlorine and hydrochloric acid gas. This removes the whole of the tin, with about 1 to 2 per cent. of tungsten. The mixture is then similarly treated at 1000°C., when the tungsten, iron, and manganese are volatilised and led into water. This precipitates the tungsten, and the iron and manganese remain in solution. The residue in the furnace consists of alumina and silica. Scheelite may be treated in a similar manner.

176,446. LIQUIDS AND SOLIDS, SEPARATION OF. J. Avrutik, 85, Valentine Lane, Yonkers, New York. Application date, November 8, 1920.

The mixture is subjected to centrifugal separation in a series of rotating baskets of increasing diameter. Each basket comprises a bottom plate 9 and perforated side walls 10. The uppermost basket 5 is provided with a vertical side wall, while the side walls of the lower baskets are inclined outwards at successively greater angles. Each basket is mounted on the hub 11 carried by the vertical shaft 13 of the driving



176,446

motor 15. The side walls of each basket are lined internally with fine wire gauze, and below each is arranged a receiving pan 19, having a central opening 22. The substance to be treated is supplied through a shoot 33 and hopper 32 to the uppermost basket 5, through which it flows over the rim to the annular groove 35 in the casing. The wall 36 deflects it into the bottom of the next pan through which it passes in a similar manner and so on. Some of the liquid passes through the perforated walls at each stage, and is collected in the pans 19. Leakage is avoided by means of rubber gaskets 27 which project into grooves formed by the turned-over edges of the baskets. The centrifugal force to which the liquid is subjected at each stage becomes progressively greater owing to the greater diameter of the drums. The mixture contains more solid material as separation progresses, so that greater outward inclination of the baskets is necessary



to facilitate flowing. The filtered liquid from the lowest basket 9 is collected in a pan 20 and discharged through a pipe 21. In order to avoid the collection of solid particles on the side walls of the casing, a perforated pipe coil 40 is arranged in each recess of the casing. The coils are connected by pipes 41, 42, 43, with a source of compressed air, water, or steam. The apparatus is particularly suitable for the separation of molasses from crystallised sugar.

**176,476. CARBON, MANUFACTURE OF.** The British Thomson-Houston Co., Ltd., 83, Cannon Street, London, E. C. 4. (From the General Electric Co., Schenectady, N.Y., U.S.A.) Application date, December 2, 1920.

The process is for producing active or absorbent carbon in a single operation. Carbonaceous material is distilled for at least two hours at a temperature above  $700^{\circ}\text{C}$ ., and then immediately subjected to the action of an oxidising medium such as steam, which does not cause substantial combustion of the carbon. The residual hydrocarbons present in the charcoal are thus removed. In one example, broken cocoanut shells are distilled for eight hours at  $950^{\circ}\text{C}$ ., steam being continuously admitted in regulated amount during the last four hours. It is found that carbon prepared in this manner has an activity between 200 and 750 as determined by the standard chloropicrin test, which determines the time taken for a trace of chloropicrin to pass through a standard thickness of the charcoal. Such charcoal is suitable for the production of high vacua, for removing residual gases in the manufacture of incandescent lamps, for removing arsine from hydrogen, and hydrocarbons from air and other gases, for clarifying and decolorising liquids, for recovering halogen compounds from solutions, for purifying water, for removing poisonous gases in gas masks, and for administering anaesthetics. It is particularly suitable for recovering solvent vapours such as petrol, by drawing air containing the vapour through the carbon and then recovering the petrol from the carbon.

**176,577. SAPONACEOUS COMPOSITIONS, MANUFACTURE OF.** F. G. Chadbourne, Star Chambers, 30, Moorgate Street, London. Application date, January 10, 1921. Addition to 160,892.

Specification 160,892 (see THE CHEMICAL AGE, Vol. IV., p. 540) describes the manufacture of a saponaceous composition containing as a filling material china clay which has been finely ground. In the present invention the china clay used is the finest grade obtainable by centrifugal separation or grading of the clay. The product is a uniform substance consisting chiefly of aluminium silicate without any free silica or mica. The average diameter of the particles of such clay is 0.00004 in.

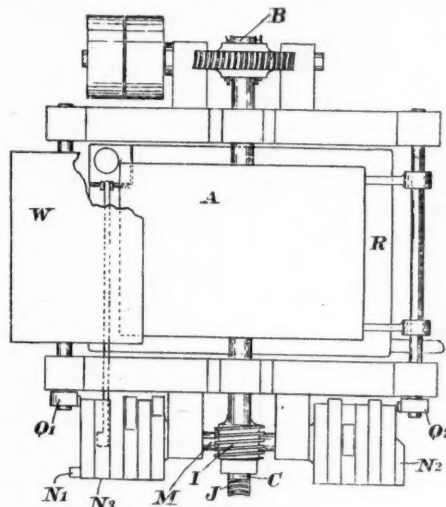
**176,588. ZINC OXIDE, MANUFACTURE OF.** A. Pearson, 17, Tyle Teg, Bufty Port, Carmarthenshire. Application date, January 17, 1921.

The process is for treating crude zinc oxide so that the lead and cadmium oxides are converted into white substances which do not affect the whiteness of the zinc oxide for use as a pigment. The crude zinc oxide is mixed with about three times the quantity of zinc sulphate, normal or basic, necessary to convert the lead and cadmium oxides into white basic sulphates. The mixture is calcined at a temperature rising from  $720^{\circ}\text{C}$ . to  $820^{\circ}\text{C}$ . Instead of zinc sulphate, sufficient sulphuric acid may be added to produce the necessary quantity of sulphate. The zinc sulphate is preferably added in the anhydrous condition to facilitate mixing with the zinc oxide, and it should be ground to 80-100 mesh. The temperature of calcination must not exceed  $878^{\circ}\text{C}$ ., when the cadmium salt begins to break up.

**176,619. ROTARY FILTER.** R. M. Johnson, 38, Sylvan Road, Snaresbrook, London, E. 11, and G. C. Hurrell, 51, Ulundi Road, Blackheath, London, S.E. 3. Application date, February 4, 1921.

The filter is of the kind in which a revolving drum covered with a filtering medium receives the mixture to be filtered on its outer surface and a vacuum is maintained inside the drum to draw the liquid through the filtering material. In such apparatus the interior is divided into several radial sections revolving around a central valve, so that one section is under vacuum, on another section the filter cake is subjected to washing with water or air drying, and on another section the filter cake is scraped from the surface of the drum. These processes are completed in one revolution, which may

take several minutes. In the present invention one or more revolutions are taken for each operation so that a better control is obtained. The drum A is mounted on a horizontal shaft, of which one end B is solid and the other end C is hollow, and is provided with a suction pipe passing through the centre. The shaft C carries a worm I, engaging with a worm wheel J mounted on the shaft M, which is driven at a slower speed. The shaft M carries a number of cams,  $N_1, N_2, N_3, \dots$  each engaging with a separate tappet



176,619

or lever,  $O_1, O_2, \dots$ . These levers operate in the proper sequence the various scrapers, rollers, vacuum valves, liquid supply mechanism, wash water valves, &c. The time allotted to each operation depends on the disposition of the cams. The liquid is contained in a pan R below the drum, and the filter cake is removed by a scraper W. Several revolutions are preferably allowed for collecting the filter cake, to prevent cracking due to partial drying. A variable gearing may be provided to vary the speed ratio of the driving shaft and cam shaft.

**176,713. ELECTRICAL PRECIPITATION APPARATUS.** The Lodge Fume Co., Ltd., and N. Stallard, Great Charles Street, Birmingham. Application date, May 21, 1921.

F Suspended particles are precipitated from gases by passing the gas through a tube or between plates, the discharge electrode being in the form of a wire passing through the tube or between the plates. The wires are suspended from a crossbar. Provision is usually made for periodically tapping the tubes or plates to dislodge dust, and in this invention the tapping device is adapted to strike the upper crossbar also, to free it from dust. The tapping hammer is arranged to strike a rod and project it against the crossbar, and immediately afterwards to strike an anvil plate attached to the tubes.

**176,729. ORES AND RESIDUES CONTAINING OXIDES OF CHROMIUM, PURIFICATION OF.** W. H. Dyson, Ringwood, Normandy, near Guildford, and L. Aitchison, New Eldon Chambers, 46, Cherry Street, Birmingham. Application dates, October 28, 1920, and July 14, 1921.

Ores and other products containing oxides of chromium are heated in a current of chlorine or hydrochloric acid gas, without the presence of any reducing agent. Hydrogen may also be added to the gases in some cases. The temperature and the nature of the reacting gas must be determined by experiment for each product treated, e.g., chromite is best treated with a mixture of hydrochloric acid and hydrogen to volatilise the iron as chloride. The remaining chromium is volatilised as chloride by treatment at the same temperature with chlorine or a mixture of chlorine and hydrogen. The iron is volatilised at a temperature of  $900^{\circ}\text{C}$ . and the chromium at  $1200^{\circ}\text{C}$ .

NOTE.—Abstracts of the following specifications, which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Con-

vention: 164,757 (E. Merck, O. Wolfes, and H. Maeder) relating to tropinone mono-carboxylic acid esters, *see* Vol. V., p. 193.

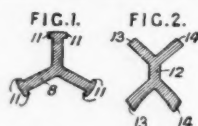
#### International Specifications not yet Accepted

175,238. ALCOHOLS. Badische Anilin and Soda Fabrik, Ludwigshafen-on-Rhine, Germany. International Convention date, February 10, 1921. Addition to 158,906.

A mixture of an aldehyde vapour and hydrogen is passed over finely-divided copper to obtain the corresponding alcohol. The copper is obtained by reducing a copper compound which has not been obtained by precipitation or by any process involving a red heat. In one method of obtaining the catalyst, pumice coated with copper powder and water glass solution or colloidal silica is heated to 200°C. to oxidise the copper, which is then reduced at 200°-250°C. Alternatively, pumice is coated with copper formate, which is then reduced by hydrogen. In another alternative, malachite is reduced at 200°-250°C. The copper obtained may be mixed with an activator. The process is applied to the manufacture of ethyl alcohol from acetaldehyde, methyl alcohol from formaldehyde, and benzyl alcohol from benzaldehyde.

175,273. FILLING MATERIAL FOR REACTION COLUMNS. G. Petzel, 5, Usterstrasse, Zurich, Switzerland. International Convention date, March 17, 1920.

Reaction columns are filled with bodies having inclined vanes 8, and additional surfaces 11 to increase the number



175,273.

of contact surfaces for the liquids and gases in the column. In one form an additional vane 12 may connect two sets of angularly arranged vanes 13, 14. The surface of the vanes may be increased by means of perforations, notches, or ridges. Metal, porcelain, glass, terra-cotta, or glazed or unglazed brick may be used as the material.

175,285. PURIFYING WASTE LIQUIDS. E. Posseger Abwasser- und Wasserreinigungs Ges., Essen, Germany. (Assignees of Abwasser-Wasserreinigungs Ges. Posseger and Niessen, Essen, Germany.) International Convention date, February 10, 1921.

The process is more particularly for removing phenol from alkaline waste water from ammonia works. The water is allowed to settle to remove solid matter, and then acidified by passing a portion through acid resins obtained in benzene purification. The water is then agitated with benzene to extract the phenol, and the benzene is then purified for further use by agitating with caustic soda to remove the phenol. After the acid resin has been used for neutralising purposes, the residue may be used as fuel or insulating material.

#### LATEST NOTIFICATIONS

177,777. Apparatus for the synthesis of ammonia by means of hyper-pressure. Soc. Chimique de la Grande Parioise (Azote et Produits Chimiques). March 31, 1921.

177,807. Process for the manufacture of nortropinone derivatives. Merck, E. [Firm of], Wolfes, O., and Maeder, H. April 4, 1921.

177,809 and 177,810. Manufacture of cellulose derivatives. Lilienfeld, Dr. L. April 2, 1921.

#### Specifications Accepted, with Date of Application

153,916. Inert gas mixtures of nitrogen and carbon dioxide. Production of. J. Muchka. December 3, 1917.

154,152. Aromatic hydrocarbon cement. W. S. Barrie and L. Chadwick. May 27, 1918.

155,546. Sulphur preparations of the thiophene series from tar oils of bituminous rock rich in oil. Manufacture of. H. Scheibler. November 24, 1915. Addition to 155,259.

155,775. Acetaldehyde from acetylene. Manufacture of. Stockholms Superfosfat Fabriks Aktiebolag. December 16, 1919.

155,835. Filter electrodes for electrolysis. H. O. Traun's Forschungslaboratorium Ges. July 5, 1918.

156,117. Vinyl compounds and polymerisation products thereof. H. O. Traun's Forschungslaboratorium Ges. May 24, 1918.

156,120. Vinyl halides. H. O. Traun's Forschungslaboratorium Ges. September 9, 1918.

156,136. Hexamethylene tetramine and formaldehyde. Manufacture of. H. O. Traun's Forschungslaboratorium Ges. September 9, 1919.

156,139. Low-boiling chlorinated hydrocarbon. Manufacture of. H. O. Traun's Forschungslaboratorium Ges. December 8, 1919.

156,168. Gas producers. Georgs-Marien-Bergwerks-und Hütten-Verein Akt.-Ges. May 14, 1915.

156,540. Anthraquinone and its derivatives. Manufacture of. Chemische Fabriken Worms Akt.-Ges. December 27, 1919. Addition to 156,215.

156,693. Obtaining paraffin from paraffin-containing substances, more particularly from lignite tar or shale tar. E. Erdmann. August 5, 1918. Addition to 156,594.

157,715. Recovery of resinous substances from waste sulphuric acid. Deutsch Luxemburgische Bergwerks und Hütten Akt.-Ges. May 11, 1916.

157,887. Deflocculating solid materials and agents therefor. E. G. Acheson. January 22, 1920.

158,849. Ammonia, Synthesis of. L'Air Liquide, Soc. Anon. pour l'Etude et l'Exploitation des Procédés G. Claude. February 2, 1920.

159,866. Cyanamide from calcium cyanamide. Method of producing. Wargons Aktiebolag, and H. J. Lidholm. March 3, 1920.

164,711 and 166,875. Abstracting oxygen from water by means of metallic filters. P. Kestner. June 10, 1920, and July 22, 1920. 166,875 addition to 164,711.

172,027. Cyanic compounds. H. Mehner. November 26, 1920.

176,002-3. Dispersoids, Disintegrator for producing. H. O. Traun's Forschungslaboratorium Ges. February 8, 1919.

177,180. Decolorising carbon, Regeneration of. J. N. A. Sauer. June 20, 1919.

177,189. Alkyl sulphates. Manufacture of. H. Dreyfus. September 29, 1920.

177,236. Gas producers and carbonisers. T. H. Parker. December 20, 1920.

177,239. Low temperature distillation. E. Barrs. December 20, 1920.

177,262. Latex, Treatment of. Sir H. A. Wickham and Roa, Ltd. December 23, 1920.

177,283. 3:3'-diamino-4:4'-dihydroxyarsenobenzene, Manufacture of derivatives of. Boot's Pure Drug Co., Ltd., and L. Anderson. January 7, 1921.

177,289. Gas producers. D. B. Dickson. January 11, 1921.

177,310. Pyrosulphates, Manufacture of. British Cellulose and Chemical Manufacturing Co., Ltd., and W. Bader. January 20, 1921.

177,323. Furnace or kiln. D. H. Bibb. January 28, 1921.

177,362. Ethylene derivatives, Manufacture of. W. Carpmael. (Farbenfabriken vorm. F. Bayer & Co.) February 23, 1921.

177,444. Treating waste or other liquors containing ferrous chloride. E. V. Chambers, T. C. Hammond, and W. Sowden. June 14, 1921.

#### Applications for Patents

Adam, W. G., Galbraith, W. L., and Siderfin, N. E. Chemical reduction of organic compounds, &c. 9564. April 3.

British Dyestuffs Corporation, Ltd., Green, A. G., and Saunders, K. H. Preparation of azo-compounds. 9792. April 5.

Carmichael & Co., Ltd., J. F., and Guillaume, F. Means for elevating and controlling supply of acids, &c. 9765. April 5.

Chemical Engineering Co. (Manchester), Ltd., and Spensley, J. W. Processes for producing intimate mixtures of substances and for obtaining chemical products therefrom. 9681. April 4.

Constantinesco, G. Producing mixtures of liquids and gases. 9760. April 5.

Craig, T. J. I. Granulation of aluminous materials. 9834. April 6.

Dutt, E. E. Process for extraction of titanium dioxide and vanadium salts from bauxite. 9828. April 6.

Gooderham, A. E., and Gartlan, S. L. Process of treating hydrocarbons, and apparatus for treating hydrocarbons. 9672 and 9673. April 4.

Minerals Separation, Ltd, Middleton, A. B., and Beasley, W. H. Production of coke. 9813. April 5.

Morison, D. B. Degassing liquids. 9707. April 4.

Polysius, G. [Firm of]. Low-temperature carbonisation of materials. 10079. April 8. (Germany, May 3, 1921.)

Snia Soc. di Navigazione Industriale Commercio Reparto Viscosa. Processes for treatment of viscose substances. 9905. April 6.

(Italy, April 7, 1921.)

Walker, H. M. Manufacturer of paint, varnish, &c. 9699. April 4.

Zdanowich, J. O. Manufacture of cellulose acetates, &c. 9796. April 5.

#### French Chemical Trade in South Africa

In order to stimulate trade between France and South Africa, M. Armand, French Consul at Durban, has drawn up a report containing information and suggestions for French business men anxious to improve their relations with the Dominion. Among the principal goods to be imported into South Africa, chemical products, fertilisers, phosphates, and perfumery are to occupy an important position.

## Market Report and Current Prices

Our Market Report and Current Prices are exclusive to THE CHEMICAL AGE, and, being independently prepared with absolute impartiality by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., may be accepted as authoritative. The prices given apply to fair quantities delivered ex wharf or works, except where otherwise stated. The weekly report contains only commodities whose values are at the time of particular interest or of a fluctuating nature. A more complete report and list are published once a month. The current prices are given mainly as a guide to works managers, chemists, and chemical engineers; those interested in close variations in prices should study the market report.

LONDON, APRIL 11, 1922.

A FAIR business has been transacted in chemicals during the current week, and there appears to be slightly more disposition on the part of buyers to show interest in placing orders for forward position.

The revisions announced in a number of products that were formerly subject to duty under the Safeguarding Act have not so far had any apparent effect on prices.

Export trade has been a shade better, but leaves a great deal to be desired.

### General Chemicals

ACETONE is in quite good demand, and the price is firm.

ACID ACETIC is moving off at last quoted figures, and the material seems scarce for near delivery.

ACID CITRIC has registered a slightly further advance, and is very scarce for early delivery.

ACID FORMIC is without change in value.

ACID LACTIC has been in better request, and the price is very firm.

ACID OXALIC is unchanged, and the demand is good.

BARIUM CHLORIDE tends slightly upwards, and it is difficult to secure near supplies.

CREAM OF TARTAR.—Continental material has advanced in price, and the outlook is healthy.

FORMALDEHYDE is inclined to be easy, with only a small business reported.

LEAD ACETATE.—The demand is maintained.

LEAD NITRATE has been in better request at last quoted figures.

LITHOPONE is only in fair demand, but the price is unchanged.

POTASSIUM CARBONATE has been weak again, and very little business is passing.

POTASSIUM CAUSTIC is also weak and in buyers' favour.

POTASSIUM PERMANGANATE continues steady, with a fair amount of business of small volume reported.

POTASSIUM PRUSSATE is very scarce and firm.

SODA ACETATE has been in fair request, and the price is maintained.

SODA BICHRIMATE has been in better demand, and stocks in second hands are extremely light.

SODIUM BISULPHITE is moving off steadily at last quoted figures.

SODIUM NITRITE has been a better market, and the price is well maintained.

SODIUM PRUSSATE continues scarce and firm.

ZINC OXIDE has also been a good market, and the price is well maintained.

### Coal Tar Intermediates

BUSINESS continues on quiet lines, with no signs of any great expansion, but a fair number of export inquiries have been received and a certain number of orders booked.

ALPHA NAPHTHOL is steady and without any outstanding feature.

ALPHA NAPHTHYLAMINE is very firm, and good orders have been booked on home and export account.

ANILINE OIL AND SALT are without change, and export inquiries have been received for the salt.

ANTHRAQUINONE has been inquired for on export account.

BENZIDINE BASE is without special feature.

BETA NAPHTHOL is steady, and a number of small inquiries have been received, while a certain amount of export trade is also in the market.

DIMETHYLANILINE has received some interest on home account.

DIPHENYLAMINE is very firm, and a fair business has been done in the home market.

"H" ACID is without change in price, and inquiries and orders have been received.

NAPHTHONIC ACID is without change, and a small business is moving.

NITRO BENZOL is steady, and the usual small orders have been placed.

ORTHO TOLUIDINE.—A fair business has been done on home account.

PARADICHLOROBENZENE has been inquired for on export account.

PARANITRANILINE is rather firmer, with a steady business passing.

### Coal Tar Products

THE market generally in coal tar products is getting more satisfactory, and a fair amount of fresh business has been done in the past week.

90's BENZOL is in rather better demand, although it can still be bought at 2s. 1d. per gallon on rails in the North.

PURE BENZOL remains unchanged, and is worth 2s. 7d. on rails in the North, and 2s. 11d. in the South.

CREOSOTE OIL has an improved inquiry, and there has been a fair amount of business done this week. Price is about 4½d. per gallon on rails in the North and about 5d. in the South.

CRESYLIC ACID is quoted at 2s. per gallon on rails for the Pale quality, while the Dark is worth 1s. 9d. on rails.

SOLVENT NAPHTHA can be bought at 2s. per gallon, and is uninteresting.

HEAVY NAPHTHA is quoted at 2s. per gallon on rails.

NAPHTHALENE is weak, and the crude qualities are worth £5 to £7 per ton, while the refined is quoted £15 per ton.

PITCH.—The market is quiet, and in the absence of orders prices are somewhat easier. To-day's quotations are 72s. 6d., f.o.b. London, 67s. 6d. to 70s. f.o.b. East Coast.

### Sulphate of Ammonia

The position is unchanged.

### Current Prices

#### Chemicals

	Per	£	s.	d.	to	£	s.	d.
Acetic anhydride.....	lb.	0	1	10	to	0	2	0
Acetone oil .....	ton	77	10	0	to	80	0	0
Acetone, pure.....	ton	77	10	0	to	80	0	0
Acid, Acetic, glacial, 99-100%.....	ton	55	0	0	to	60	0	0
Acetic, 80% pure .....	ton	47	0	0	to	48	0	0
Arsenic .....	ton	90	0	0	to	95	0	0
Boric, cryst.....	ton	60	0	0	to	65	0	0
Carbolic, cryst. 39-40%.....	lb.	0	0	6½	to	0	0	7
Citric .....	lb.	0	2	0	to	0	2	0
Formic, 80% .....	ton	72	10	0	to	75	0	0
Gallic, pure.....	lb.	0	3	4	to	0	3	6
Hydrofluoric .....	lb.	0	0	8½	to	0	0	9
Lactic, 50 vol.....	ton	40	0	0	to	43	0	0
Lactic, 60 vol.....	ton	43	0	0	to	45	0	0
Nitric, 80 Tw.....	ton	30	0	0	to	31	0	0
Oxalic .....	lb.	0	0	8½	to	0	0	9
Phosphoric, 1.5 .....	ton	43	0	0	to	45	0	0
Pyrogallie, cryst.....	lb.	0	6	6	to	0	6	9
Salicylic, Technical .....	lb.	0	0	10½	to	0	1	0
Salicylic, B.P.....	lb.	0	1	4	to	0	1	6
Sulphuric, 92-93%.....	ton	8	0	0	to	8	10	0
Tannic, commercial .....	lb.	0	2	9	to	0	3	0
Tartaric .....	lb.	0	1	4	to	0	1	4½
Alum, lump.....	ton	12	10	0	to	13	0	0
Alum, chrome.....	ton	30	10	0	to	32	0	0
Alumino ferric.....	ton	9	0	0	to	9	10	0
Aluminium, sulphate, 14-15%.....	ton	12	0	0	to	13	0	0
Aluminium, sulphate, 17-18%.....	ton	13	10	0	to	14	10	0
Ammonia, anhydrous.....	lb.	0	1	8	to	0	1	10
Ammonia, .880.....	ton	35	0	0	to	37	0	0
Ammonia, .920.....	ton	22	0	0	to	24	0	0
Ammonia, carbonate.....	lb.	0	0	4	to	—	—	—
Ammonia chloride.....	ton	60	0	0	to	65	0	0
Ammonia, muriate (galvanisers).....	ton	35	0	0	to	37	10	0
Ammonia, nitrate .....	ton	55	0	0	to	60	0	0
Ammonia, phosphate.....	ton	90	0	0	to	95	0	0
Ammonia, sulphocyanide.....	lb.	0	3	0	to	—	—	—
Amyl acetate .....	ton	175	0	0	to	185	0	0
Arsenic, white, powdered.....	ton	42	0	0	to	44	0	0
Barium, carbonate, 92-94%.....	ton	12	10	0	to	13	0	0
Barium, Chlorate .....	lb.	0	0	11	to	0	1	0



	Per	£	s.	d.	to	£	s.	d.
Barium-Chloride.....	ton	16	0	0	to	17	10	0
Nitrate.....	ton	32	0	0	to	35	0	0
Sulphate, blanc fixe, dry.....	ton	24	0	0	to	25	0	0
Sulphate, blanc fixe, pulp.....	ton	15	0	0	to	16	0	0
Sulphocyanide, 95%.....	lb.	0	1	6	to	—	—	—
Bleaching powder, 35-37%.....	ton	13	0	0	to	13	10	0
Borax crystals.....	ton	29	0	0	to	33	0	0
Calcium acetate, Brown.....	ton	8	0	0	to	9	0	0
Grey.....	ton	11	0	0	to	12	0	0
Calcium (carbide).....	ton	16	0	0	to	17	0	0
Chlor de.....	ton	7	10	0	to	8	0	0
Carbon bisulphide.....	ton	60	0	0	to	62	0	0
Casein, technical.....	ton	75	0	0	to	80	0	0
Cerium oxalate.....	lb.	0	3	6	to	0	3	9
Chromium acetate.....	lb.	0	1	1	to	0	1	3
Cobalt acetate.....	lb.	0	11	0	to	0	11	6
Oxide, black.....	lb.	0	10	6	to	0	11	0
Copper chloride.....	lb.	0	1	3	to	0	1	0
Sulphate.....	ton	28	10	0	to	29	0	0
Cream Tartar, 98-100%.....	ton	120	0	0	to	125	0	0
Epsom salts (see Magnesium sulphate)								
Formaldehyde, 40% vol.....	ton	72	10	0	to	75	0	0
Formusol (Rongalite).....	lb.	0	3	9	to	0	4	0
Glauber salts, commercial.....	ton	4	5	0	to	4	10	0
Glycerine, crude.....	ton	70	0	0	to	72	10	0
Hydrogen peroxide, 12 vols.....	gal.	0	2	5	to	0	2	6
Iron perchloride.....	ton	30	0	0	to	32	0	0
Iron sulphate (Copperas).....	ton	4	0	0	to	4	5	0
Lead acetate, white.....	ton	42	0	0	to	43	0	0
Carbonate (White Lead).....	ton	40	0	0	to	44	0	0
Nitrate.....	ton	46	10	0	to	48	10	0
Litharge.....	ton	35	10	0	to	36	0	0
Lithopone, 30%.....	ton	24	0	0	to	25	0	0
Magnesium chloride.....	ton	10	0	0	to	10	10	0
Carbonate, light.....	cwt.	2	10	0	to	2	15	0
Sulphate (Epsom salts commercial).....	ton	8	0	0	to	8	10	0
Sulphate (Druggists').....	ton	13	10	0	to	14	10	0
Manganese, Borate.....	ton	70	0	0	to	75	0	0
Sulphate.....	ton	70	0	0	to	75	0	0
Methyl acetone.....	ton	85	0	0	to	90	0	0
Alcohol, 1% acetone.....	ton	72	0	0	to	73	0	0
Nickel sulphate, single salt.....	ton	61	0	0	to	62	0	0
Ammonium sulphate, double salt.....	ton	62	0	0	to	64	0	0
Potash, Caustic.....	ton	34	0	0	to	35	0	0
Potassium bichromate.....	lb.	0	0	7½	to	—	—	—
Carbonate, 90%.....	ton	31	0	0	to	33	0	0
Chloride 80%.....	ton	15	0	0	to	20	0	0
Chlorate.....	lb.	0	0	4½	to	0	0	5
Meta bisulphite, 50-52%.....	ton	84	0	0	to	90	0	0
Nitrate, refined.....	ton	45	0	0	to	47	0	0
Permanganate.....	lb.	0	0	9	to	0	0	10
Prussiate, red.....	lb.	0	3	9	to	0	4	0
Prussiate, yellow.....	lb.	0	1	2	to	0	1	2½
Sulphate, 90%.....	ton	20	0	0	to	22	0	0
Sal ammoniac, firsts.....	cwt.	3	5	0	to	—	—	—
Seconds.....	cwt.	3	0	0	to	—	—	—
Sodium acetate.....	ton	25	0	0	to	26	0	0
Arsenate, 45%.....	ton	45	0	0	to	48	0	0
Bicarbonate.....	ton	10	10	0	to	11	0	0
Bichromate.....	lb.	0	0	5½	to	—	—	—
Bisulphite, 60-62%.....	ton	25	0	0	to	27	10	0
Chlorate.....	lb.	0	0	3½	to	0	0	4
Caustic, 70%.....	ton	23	10	0	to	24	0	0
Caustic, 76%.....	ton	25	0	0	to	25	10	0
Hydrosulphite, powder, 85%.....	lb.	0	2	3	to	0	2	6
Hyposulphite, commercial.....	ton	13	10	0	to	14	0	0
Nitrite, 96-98%.....	ton	32	0	0	to	34	0	0
Phosphate, crystal.....	ton	19	10	0	to	20	0	0
Perborate.....	lb.	0	1	3	to	0	1	4
Prussiate.....	lb.	0	0	9½	to	0	0	10
Sulphide, crystals.....	ton	13	0	0	to	14	0	0
Sulphide, solid, 60-62%.....	ton	21	10	0	to	23	10	0
Sulphite, cryst.....	ton	13	0	0	to	14	0	0
Strontium carbonate.....	ton	60	0	0	to	65	0	0
Strontium Nitrate.....	ton	60	0	0	to	62	10	0
Strontium Sulphate, white.....	ton	7	10	0	to	8	10	0
Sulphur chloride.....	ton	25	0	0	to	27	10	0
Sulphur, Flowers.....	ton	13	0	0	to	14	0	0
Roll.....	ton	13	0	0	to	14	0	0
Tartar emetic.....	lb.	0	1	6½	to	0	1	7
Tin perchloride, 33%.....	lb.	0	1	2	to	0	1	4
Perchloride, solid.....	lb.	0	1	5	to	0	1	7
Protochloride (tin crystals).....	lb.	0	1	5	to	0	1	6
Zinc chloride 102 Tw.....	ton	21	0	0	to	22	10	0
Chloride, solid, 96-98%.....	ton	35	0	0	to	40	0	0
Oxide, 99%.....	ton	39	0	0	to	40	0	0
Dust, 90%.....	ton	45	0	0	to	47	10	0
Sulphate.....	ton	18	10	0	to	19	10	0

## Coal Tar Intermediates, &amp;c.

	Per	£	s.	d.	to	£	s.	d.
Alphanaphthol, crude.....	lb.	0	2	3	to	0	2	6
Alphanaphthol, refined.....	lb.	0	3	0	to	0	3	3
Alphanaphthylamine.....	lb.	0	2	0	to	0	2	3
Aniline oil, drums extra.....	lb.	0	1	0	to	0	1	1
Aniline salts.....	lb.	0	1	1	to	0	1	2
Anthracene, 40-50%.....	unit	0	0	8½	to	0	0	9
Benzaldehyde (free of chlorine).....	lb.	0	3	9	to	0	4	3
Benzidine, base.....	lb.	0	5	9	to	0	6	0
Benzidine, sulphate.....	lb.	0	5	9	to	0	6	0
Benzoic acid.....	lb.	0	1	7½	to	0	1	9
Benzoate of soda.....	lb.	0	1	6	to	0	1	7
Benzyl chloride, technical.....	lb.	0	2	0	to	0	2	3
Betanaphthol benzoate.....	lb.	0	4	9	to	0	5	0
Betanaphthol.....	lb.	0	1	9	to	0	2	0
Betanaphthylamine, technical.....	lb.	0	6	0	to	0	7	0
Croceine Acid, 100% basis.....	lb.	0	3	6	to	0	3	9
Dichlorobenzol.....	lb.	0	0	9	to	0	0	10
Diethylaniline.....	lb.	0	2	9	to	0	3	0
Dinitrobenzol.....	lb.	0	1	3	to	0	1	4
Dinitrochlorobenzol.....	lb.	0	0	10	to	0	1	0
Dinitronaphthalene.....	lb.	0	1	4	to	0	1	5
Dinitrotoluol.....	lb.	0	1	5	to	0	1	6
Dinitrophenol.....	lb.	0	2	9	to	0	3	0
Dimethylaniline.....	lb.	0	2	6	to	0	2	9
Diphenylamine.....	lb.	0	4	3	to	0	4	6
H-Acid.....	lb.	0	6	6	to	0	7	0
Metaphenylenediamine.....	lb.	0	5	6	to	0	5	9
Monochlorobenzol.....	lb.	0	0	10	to	0	1	0
Metanilic Acid.....	lb.	0	6	0	to	0	6	6½
Monosulphonic Acid (2.7).....	lb.	0	5	6	to	0	6	0
Naphthionic acid, crude.....	lb.	0	3	3	to	0	3	6
Naphthionate of Soda.....	lb.	0	3	3	to	0	3	6
Naphthylamine-di-sulphonic-acid.....	lb.	0	4	0	to	0	4	3
Neville Winther Acid.....	lb.	0	7	9	to	0	8	0
Nitronaphthalene.....	lb.	0	1	4	to	0	1	5
Nitrotoluol.....	lb.	0	1	0	to	0	1	2
Orthoamidophenol, base.....	lb.	0	10	0	to	0	10	5
Orthodichlorobenzol.....	lb.	0	1	0	to	0	1	1
Orthotoluidine.....	lb.	0	1	6	to	0	1	9
Orthonitrotoluol.....	lb.	0	0	10	to	0	1	0
Para-amidophenol, base.....	lb.	0	10	0	to	0	10	6
Para-amidophenol, hydrochlor.....	lb.	0	10	6	to	0	11	0
Paradichlorobenzol.....	lb.	0	0	6	to	0	0	7
Paranitraniline.....	lb.	0	3	6	to	0	3	9
Paranitrophenol.....	lb.	0	2	3	to	0	2	6
Paranitrotoluol.....	lb.	0	5	0	to	0	5	3
Paraphenylenediamine, distilled.....	lb.	0	10	6	to	0	10	9
Paratoluidine.....	lb.	0	7	0	to	0	7	6
Phthalic anhydride.....	lb.	0	2	9	to	0	3	0
Resorcin, technical.....	lb.	0	5	6	to	0	6	0
Resorcin, pure.....	lb.	0	7	3	to	0	7	6
Salol.....	lb.	0	2	4	to	0	2	6
Sulphanilic acid, crude.....	lb.	0	1	0	to	0	1	1
Tolidine, base.....	lb.	0	6	6	to	0	7	0
Tolidine, mixture.....	lb.	0	2	6	to	0	2	9

## Coal Sampling and Cleaning

WORK on the development of new types of coal sampling apparatus is being done at the Washington office of the U.S.A. Bureau of Mines, under the direction of Mr. O. P. Hood, chief mechanical engineer. The practicability of coal inspection on a large scale depends upon the development of sampling devices which can obtain a true representative sample with the least possible interference with transportation methods. This means the development of apparatus somewhat comparable with apparatus used for loading and unloading coal. A machine has been developed which will drill a six-inch hole vertically through coal carried in a car and abstract the cuttings. Complete detailed plans have been made for a single sampler adapted to take samples from truck loads at the Government Fuel Yard. General plans have also been developed for a multiple sampler adapted to take samples from open top cars in a railroad train without distributing the train or unloading the coal. Only the reduced laboratory sample is to be taken from the sampler.

The past work on the float-and-sink method of cleaning coal, conducted at the Northwest Experiment Station of the Bureau of Mines has resulted in the development of an efficient large-sized machine for making these tests. This machine has been used in studying the washability of coal, in controlling the washing operation, and for measuring the efficiency of the individual coal-washing machines. In using this machine for future studies there is a possibility that it will be developed even to a more efficient point.

## Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.

GLASGOW, APRIL 12, 1922.

WHILE inquiries during the past week were more plentiful, the amount of business actually transacted was still small.

Offers of heavy chemicals from Continental works continue to be received and their quotations generally remain fairly steady.

Acetic acid, except glacial, is now free from S.O.I. duty.

There is little of importance to record in coal-tar and wood distillation products.

## Industrial Chemicals

ACETONE.—The market for spot delivery is firm. America offering at a concession for forward.

ACID ACETIC.—Very little available for spot delivery and prices consequently higher. Glacial quoted £60 to £61 per ton; 80% B.P. quality, £48 to £49 per ton.

ACID BORACIC.—Prices unchanged. Crystal or granulated, £60 per ton. Powdered, £62 per ton.

ACID HYDROCHLORIC, 28/30°.—Demand still very poor. No change in price of 6s. 6d. per carboy ex works.

ACID NITRIC, 84°Tw.—£30 per ton, carboys, ex works.

ACID OXALIC.—Very little inquiry. Price steady at 8½d. per lb.

ACID SULPHURIC.—Makers' prices unchanged, 144°, £4 per ton; 168°, £7 5s. per ton. De-arsenicated, £1 per ton more.

ACID TARTARIC.—B.P. offered at 1s. 2½d. per lb. delivered. Market weak.

ALUM, POTASH.—Slight business done at £15 5s. per ton ex store for lump. Continental offers of £14 c.i.f.

AMMONIA MURIATE.—Little business passing. Makers now quoting £34 f.o.r. Glasgow.

AMMONIA SALAMMONIAC.—No change in price and little demand. Price, £58 per ton.

AMMONIA SULPHATE.—Supplies scarce for prompt delivery. 25½%, £15 10s. per ton; 25¾%, neutral quality, £16 13s. per ton; ex works, April/May delivery.

ARSENIC, WHITE, POWDERED.—A few inquiries for small lots. Price £40 to £41 ex quay.

BLEACHING POWDER.—In slightly better demand. Spot lots, £14 per ton ex station.

BORAX.—Usual demand for small lots. Crystals or granulated, £29 per ton; powdered, £30 per ton.

CALCIUM CARBIDE.—Practically no inquiry. Price unchanged, £20 per ton ex store.

CALCIUM CHLORIDE.—Home makers' price, £6 10s. per ton ex station. Spot lots of Continental make on offer at £6 per ton.

FORMALDEHYDE, 40%.—Poor inquiry and slightly lower quotations. Price, £72 to £74 per ton.

GLAUBER SALTS.—Fair inquiry. Commercial quality, £5 10s. to £6 per ton delivered.

LEAD ACETATE.—Very few inquiries. Makers' price unchanged. Brown £33 per ton. White Crystals, £42 per ton. Cheaper spot lots on offer. White, £38 to £39 per ton.

LEAD, RED.—Practically no inquiry; £34 10s. per ton.

LEAD, WHITE.—£49 per ton, ex station.

MAGNESITE.—Spot lots still available at £12 per ton ex store, but little inquiry.

MAGNESIUM CHLORIDE.—In fair demand. Spot lots to be had at £8 per ton. Continental offers of £6 10s. c.i.f. U.K.

NAPHTHALENE.—Fine White Flakes quoted £16 10s. f.o.r. or f.o.b. Continental offers of £15 per ton c.i.f. U.K. ports.

NITRE CAKE.—£3 10s. per ton f.o.b. Liverpool, Hull, or Manchester; casks included.

POTASSIUM BICHROMATE.—Price, 6½d. per lb. A few inquiries, but little actual business.

POTASSIUM CARBONATE, 90/92%.—Very little demand. Spot lots quoted £27 to £28 per ton.

POTASSIUM CAUSTIC, 88/92%.—One or two inquiries for moderate quantities. Spot lots at £33 per ton ex store. Continental offers of £30 per ton c.i.f. April delivery.

POTASSIUM CHLORATE.—Price 5d. per lb. delivered. Cheaper lots on offer, but little demand.

POTASSIUM NITRATE (SALTPETRE).—A few small inquiries. Price £37½ to £38 ex store.

POTASSIUM PERMANGANATE.—Quoted 9d. to 10d. per lb.

SODIUM (NORWEGIAN).—Offering at 10d. per lb. c.i.f. U.K.

SODIUM BICHROMATE.—Makers quote 5½d. per lb. Cheaper offers of Continental and American make.

SODIUM CARBONATE (SODA ASH).—Moderate inquiry but little business done. Spot lots, £9 12s. 6d. per ton ex quay.

SODIUM CARBONATE (SODA CRYSTALS).—Makers' price, £6 per ton ex quay or station.

SODIUM CAUSTIC, 70/72%.—£23 10s. 76/77%, £25 10s. 60%, £26. 98/99% powdered, £29 to £30 per ton. Very little demand for any strength.

SODIUM HYPOSULPHITE.—Pea Crystals, £20 to £21 per ton. Commercial, £14 to £15 per ton. In moderate request.

SODIUM NITRATE.—95% quoted £15 per ton. 96% Refined, £15 5s. per ton.

SODIUM NITRITE, 100%.—Quoted £30 to £31 per ton. Little business passing.

SODIUM SILICATE 140°.—Practically no demand. Spot lots, £10 to £11 ex station.

SODIUM SULPHATE (SALTCAKE 95%).—No change in price. £4 per ton. A few inquiries for export and small quantities to be had at about £3 17s. 6d. f.o.b. U.K. port.

SODIUM SULPHIDE, 60/65%.—Cheaper offers for export. Solid, £19 10s. to £20. Broken £2 extra.

SODIUM SULPHIDE, 30/32% CRYSTALS.—Spot parcels offering at £12 5s. f.o.r. works.

SODIUM SULPHITE CRYSTALS.—Price nominal, £13 10s. per ton.

SULPHUR.—Small lots in moderate request. Price ex store as follows:—Flowers, £14; Ground, £13; Rock, £12; Roll, £13.

TIN CRYSTALS.—Quoted slightly lower. About 1s. 2d. to 1s. 3d. per lb.

ZINC OXIDE.—"Red Seal" on offer at £39 per ton ex store.

ZINC SULPHATE.—Price for spot lots about £17 to £18. Very little demand.

NOTE.—Prices quoted are for bulk parcels and are not to be taken as applicable to small lots.

## Coal Tar Intermediates and Wood Distillation Products

ALPHANAPHTHYLAMINE.—Small inquiry. 2s. 2d. per lb. delivered.

ANTHRAQUINONE.—Some inquiry for home consumpt. Price 3s. 3d. per lb. delivered.

BENZIDINE BASE.—Small inquiry for local consumpt. Price 6s. 6d. per lb. 100% basis, casks included.

BENZOL.—Larger quantities offering. 90's quoted 2s. 4d. per gallon.

DIAMIDO-DIPHENYLAMINE SULPHATE.—Small inquiry. 16s. 3d. per lb. 100% basis, casks included, carriage paid.

DIMETHYLANILINE.—Inquiry for home trade. 2s. 8½d. per lb. delivered, loan drums.

"H" ACID.—Inquiries for home trade. 7s. per lb. 100% basis.

METANILIC ACID.—Enquiry for export. 3s. 9d. per lb. 100% basis, f.o.b. U.K. port.

NAPHTHONATE OF SODA.—Some inquiry. 3s. 3d. per lb. 100% basis, carriage paid.

NAPHTHONIC ACID.—Inquiry for home trade. Offered at 2s. 11d. per lb. 100% basis.

PHENYL PERI ACID.—Small inquiry. 7s. 6d. per lb. 100% basis.

SULPHANILIC ACID.—Some inquiry. 1s. 6d. per lb. 100% basis, carriage paid, packages extra.

TOLIDINE BASE.—Inquiry for local consumpt. 7s. per lb. 100% basis, packing included, delivered.

## Recent Wills

Sir Alfred Bird, of Tudor Grange, Solihull, Warwickshire, chairman of Alfred Bird and Sons Ltd., manufacturing chemists, Birmingham .....	£653,656
Mr. Frederick John Fitzsimmons, Altrincham, of Thomas Hyland & Co., drysalers .....	£61,543

## German Chemical Trade Notes

FROM OUR OWN CORRESPONDENT.

Berlin, April 10, 1922.

THE present state of the exchange and soaring domestic prices indicate the approach of another business crisis. Wholesalers are even granting credits to retailers in order to tide over the present position. The dye industry was, on the whole, well occupied during March. It is reported that the Interessengemeinschaft der Chemischen Industrie has decided upon a further advance in the price of aniline colours; the increase is understood to amount, on the average, to from 40 to 50 per cent. It will be recollected that the last advance (of approximately 30 per cent.) took effect as from the beginning of March.

The industrial chemical market during the past week has been dominated by speculative transactions with a corresponding fluctuation in prices. Despite a brisk demand supplies are exceedingly scarce, and such products as salt cake, bromine salts, and formic acid are practically unobtainable. The following quotations are given in marks per kilogram (d = domestic price; e. = export price):

ACIDS.—Acetic, 30%, 16/21 mk. d.; pure, 80%, 41/45 mk. d.; pure, 98/100%, 51/56 mk. d.; glacial, 98/100%, 63 mk. e. Acetyl-Salicylic, 300/310 mk. d.; 340/350 mk. e. Benzoic, commercial quality, 110 mk. d., 130 mk. e. Boric, pure crystallised, 102 mk. d.; powdered, pure, 102 mk. d. Carbolic, crude, 15/20%, 10.50 mk. d.; 50/60%, 17 mk. d. Citric, absolutely pure, crystallised, 350 mk. d.; pure, powdered, lead-free, 345 mk. d. Formic, pure, 25%, 13 mk. d. Lactic, absolutely pure, white, 25° B<sub>é</sub>, 108 mk. d. Mariatic, crude, 20/22°, B<sub>é</sub>, 3.25 mk. d. Nitric, 10° B<sub>é</sub>, 13.50 mk. d. Oxalic, 98/100%, 46 mk. d.; 85 mk. e.; crystallised, 28 mk. d.; Phosphoric, 25%, 18.50 mk. d. Salicylic, 135/145 mk. d.; 170 mk. e. Sulphuric (1.836/1.841), 10.50 mk. d. Tannic, 280 mk. d. Tartaric, firm tendency with interest from foreign buyers; powdered and crystallised, 160/170 mk. d., 210/220 mk. e. INDUSTRIAL CHEMICALS.—Alum, Chrome, 15%, 31/34 mk. d.; 42/45 mk. e.; potash, in lumps, 17 mk. d.; potash, crystal, powder, 11 mk. d., 13.25 mk. e. Alumina sulphate, 17/18%, 10.30 mk. e. Ammonium Carbonate, in lumps, 25.50 mk. d.; crystallised and powdered, 20/25 mk. d.; 28/32 mk. e. Barium Chloride, crystallised, 15 mk. d., 18 mk. e.; offerings from second-hand at 23.50 mk. e. Barium Nitrate, powdered, 38 mk. d. Bleaching Powder, 80%, 8 mk. d., 13 mk. e. Calcium Chloride, 70/75%, 6.70 mk. e. Carbon Bisulphide, rectified, 25 mk. d. Copper Sulphate, crystallised, 98/99%, 36/38 mk. d. Ferrous Carbonate, 35 mk. d. Glauber Salts, small crystallised, 2.75 mk. d., 3.50 mk. e. Magnesium Carbonate, light powdered, 40 mk. d. Potassium Carbonate, 96/98%, 28.50 mk. d., 36.50 mk. e.; white, 90/95%, 28/29 mk. d. Potassium Caustic, 88/92%, unchanged at 30 mk. d., 40 mk. e.; liquor, 50°, 13.75 mk. d. Potassium Chlorate, powdered, 30 mk. d., 36 mk. e. Potassium Cyanide, 98/100%, 90/92 mk. d. Salt Cake, 4 mk. d., 4.75 mk. e. Soda Ash, 13 mk. d. Sodium Caustic, 125/128°, 34/35 mk. d.; liquor, 38/40°, 12 mk. d. Sodium Silicate, 38/40°, 3 mk. d., 5.50 mk. e. Sodium Sulphide, 30/32%, 10.50 mk. d.; 14.50 mk. e., 60/62%, 25.50 mk. e. Sulphur, 13 mk. d.; in sticks, 14 mk. d. Tetraline, 19.30 mk. d., in tank-car loads. Zinc Chloride, pure, 37.50 mk. d.; commercial, 22 mk. e. Zinc Sulphate, pure crystallised, 17 mk. d. Dextrine, yellow, 40 mk. d. Glues.—Prices have advanced by about 100% during the past three weeks, and some factories have closed down; bone glue is quoted at 70/71 mk. d., including package; skin glue, warranted free from fat and acid, 72 mk. d. Lead, Red, 40 mk. d., 45 mk. e. Lead, White, powdered, 42 mk. d., 45 mk. e.; in oil, 42 mk. d., 44 mk. e.; Sugar of Lead, 40 mk. d., 44 mk. e. Lithopone, Red-seal, 17/18 mk. d., 25/27 mk. e. Zinc Oxide, crude, 51 mk. d. Zinc, White, red seal, 38 mk. d., 45 mk. e., offered from second-hand at 40 mk. d., 55 mk. e. Benzaldehyde, 80/85 mk. d., in good demand for export at 90 mk. Beta-Naphthol 100 mk. d. Naphthalene, pure, in balls, 18 mk. d., 18.50 mk. e.; in flakes, 17 mk. d., 17.50 mk. e. Potassium Bichromate, 85 mk. d., 96 mk. e. Potassium Prussiate, yellow, 145/160 mk. d. Sodium Hyposulphite, 17.50 mk. d., 20 mk. e.

## The Nitrate Position

## Demand Maintained: Forward Position Interesting

In their monthly report on nitrate of soda, dated March 31, Henry Bath & Son, Ltd., state that deliveries from European ports in March were about 250,000 tons, against 147,000 tons in March, 1921. Cold weather has retarded the use of nitrate during the past fortnight, but has enhanced the prospects for April consumption. The demand for nitrate on the spot in the principal consuming markets in Europe, the report continues, has on the whole been well maintained, and some

falling off of late may be attributed to the pre-occupation of consumers with deliveries and to a slackening of prices on the spot during the re-selling of a certain amount of tendered nitrate. Pool sales during February proved to be about 135,000 tons, to which since then further 85,000 tons may be added, and estimating the continuance of a good demand, for which there seems quite sufficient justification, the unsold stocks in the hands of the Pool at the end of June are likely to be reduced to a very manageable quantity, especially bearing in mind that the shipments of new nitrate from Chile must continue small for at least the next few months.

During March the Pool more than once raised their European prices, the cumulative advance in the principal markets being 10s. to 12s. 6d. per ton, and present spot quotations stand at the parity of £14 5s. to £15, with resellers at a considerable discount. The sale of further quantities for Germany has unfortunately been prevented by the continual depreciation of German currency. But for this, Germany might have taken even 200,000 tons of nitrate this spring, and the view has been expressed that next year 300,000 to 400,000 tons is not an excessive estimate of her requirements, and that means, irrespective of exchange, will be found to fill them.

## Prices of July-August Shipments

The prospect of very moderate supplies outside Chile at the end of June has attracted considerable attention to nitrate for forward delivery, but transactions have been restricted owing to the prevailing uncertainty as to the level of price which will be fixed by the Nitrate Producers' Association. Prices must be fixed during May or June for July and later shipment, and it is hoped that a decision will be come to as early as possible. The English companies, who represent rather more than a quarter of the associated producers, recently stated to Valparaiso their opinion that a reasonable price would be 9s. 6d. per quintal for July-August shipment, rising to 10s. 6d. for December-April. On the other hand, an important section of Chilean and German producers are strongly in favour of a much lower level of price being fixed. To consumers a price of, say, 8s. 6d. per quintal would in the long run no doubt be welcome, but such a drop from 10s. 3d. for June shipment would in its first incidence have a most unsettling and detrimental effect on the latter part of the current season of consumption. Present costs are no criterion of what they will be when production gets on to a larger scale and Chilean exchange rises appreciably, as it is practically certain to do; and a long view of the situation rather suggests the avoidance of violent fluctuations, of which the past two years have seen too many, and that to set the value of nitrate for what may be only a short time in a fictitious relation to that of other fertilisers will be misleading and eventually harmful.

In conclusion, the report says that meanwhile, on the prospects of a reasonable compromise between the contending parties a moderate quantity of forward nitrate has lately been bought at about 8s. 11d. for July-September, and 9s. for July-December shipment, the selling having a strong appearance of being principally speculative.

## The Melting Point of Stearine

In the King's Bench Division, on April 6, Mr. Justice Rowlatt heard a claim by A. Womersley & Son, of Bradford, against Mr. W. T. Bruce, of Union Court, London, for £247, the balance of an account for 2 tons of white stearine sold to the defendant at £130 per ton. It was stated for the plaintiffs that the defendant's suggestion was that the plaintiffs had warranted their stearine to have a melting point of 130. Actually the defendant wanted 130, but plaintiffs informed him that they could only supply 125. For the defence it was stated that the goods were not up to sample, and, further, that the parties were not *ad idem* and, therefore, there was no contract. In those circumstances the plaintiffs should have the goods back. The defendant made it clear that he wanted 130/132 stearine. He was purchasing from the plaintiffs in order to satisfy an order from Messrs. Boots, but the latter would not take the goods, and they had remained in the hands of the railway company, the defendant having to buy elsewhere at £10 more. Mr. Justice Rowlatt, giving judgment, said the plaintiffs made it plain all through that they would not undertake to sell anything but 125 quality. He could not find that they ever sent a sample of 130 quality to the defendant. He, therefore, gave judgment for the plaintiffs for the amount claimed with costs.



## Company News

**NOBEL INDUSTRIES, LTD.**—The transfer books for the 8 per cent. seven-year secured notes will be closed from April 17 to 29 inclusive.

**CANADIAN EXPLOSIVES CO.**—A dividend of 1½ per cent. for the quarter to March 31, on the 7 per cent cumulative preferred shares, is payable to-day (Saturday) to holders of record on March 31.

**BORAX CONSOLIDATED, LTD.**—The directors announce a dividend of 6 per cent. per annum, less tax, on the preferred ordinary shares in respect of the half-year to March 31. Coupon No. 29 of the preferred ordinary share warrants to bearer and half-yearly Coupon No. 46 of preference share warrants to bearer will be paid, less tax, on and after May 1 at the company's offices, 16, Eastcheap, London. The preference and preferred ordinary share transfer books will be closed from April 18 to 30, inclusive.

**WITWATERSRAND DEEP.**—The working revenue for 1921 was £83,074; forfeited dividends, £62; gold premium, 1920, under-estimated, £1,402; making £84,538. After payment of taxes £48, writing down investments £900, and allowing for funds transferred in respect of capital expenditure, £19,338, the net revenue amounts to £64,251. Dividends paid, £55,000. Appropriation account, £9,251; 418,139 tons of ore were mined, an increase of 48,572 tons compared with 1920. Development amounted to 5,966 ft., against 4,889 ft. in 1920. The payable ore reserve is now 1,067,440 tons, as compared with 1,018,390 tons for 1920. The value of this tonnage has also been increased from 6.3 dwt. to 6.6 dwt. The annual meeting will be held at Johannesburg on May 30.

**THARSIS SULPHUR AND COPPER CO.**—The report for 1921 states that the total quantity of ore raised from the Tharsis and Calañas mines during the year was 260,758 tons, against 313,918 tons in 1920, a decrease of 53,160 tons. This decrease is entirely due to the small world demand for pyrites owing to the great depression in trade. Operations at the metal works were brought to a standstill by the coal miners' strike, and have been suspended during the greater part of the year. Work is being gradually resumed as an outlet arises for their chief product, purple iron ore. The net profit for the year, including £27,156 brought in, amounts to £73,101. The annual meeting will be held at 136, West George Street, Glasgow, on April 19 at noon.

## Scientific Training in Business

ADDRESSING the Liverpool and North-Western Section of the Institute of Chemistry on April 6, Mr. W. Hulme Lever drew attention to the value of a scientific training for business men. Men who could think scientifically were badly needed, and in his experience the most successful partnerships had been those between purely scientific men and purely commercial men. On an ideal board of directors there should be at least one scientific brain, one legal brain, and one accountancy brain, all being bound together by what was known as a commercial man. It was the business man, apart from the specialist, who guided the destiny of the commerce and industry of this country, and there was no better training for a business man than a scientific education. The most obvious of its recommendations were that science sought simplification and standardisation, both of which were much needed in commerce. Mr. Lever instanced the metric system, which he was convinced, must be adopted in this country if we were to make real progress and bring the industries of the different countries more into harmony. It was necessary also that we should have some measurement whereby volume might be converted easily into weight instead of, as at present, weight having no direct connexion with volume at all. Science made men seek for truth. The history of science was one long pilgrimage in the search for truth. A business man should tackle his problems with the one object of arriving at the true facts. Finally, science produced humility; that seemed to follow naturally on the scientist's desire for truth. Some business people seemed to think that our industries were never so wonderful as they were to-day, and that they, and those at the head of them, could not be improved upon. Such people ought to take a leaf out of the book of the scientist, and learn that the realms not conquered were far greater than the realms which were conquered. Business men must realise that there was still a very great deal to be achieved that was not represented by the profit on a balance-sheet.

## Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

LOCALITY OF FIRM OR AGENT.	MATERIALS.	REF. NO.
Nova Scotia..	Lithopone and barytes .....	—
India .. ..	Perfumery and essences .. ..	D.O.T. 769/49 /F.G./ S.C.
Czecho-Slovakia	Raw materials for soap manufacture	384
Amsterdam ..	Artificial manures .....	387
Oregon .. ..	Coke .....	D.O.T. 14992/ F.W./ S.C.2
Buenos Aires	Perfumery and essences .....	D.O.T. 769/37 /F.G./ S.C.

## Tariff Changes

**GERMANY.**—An Order, effective, as from April 1, increases from 4,400 to 5,900 per cent. the premium which is leviable when the "gold" duties of the Customs tariff are paid in paper currency, i.e., 6,000 paper marks must be paid for each 100 marks "gold" duty leviable.

**ITALY.**—The price fixed for the first half of April for payment of Customs duties is 380 lire for 100 lire gold, i.e., the surcharge when duties are paid in paper is 280 per cent.

**JAPAN.**—A Bill providing for increased export duties on copper, brass, and bronze became effective as from March 30.

**PERU.**—The Consular fee for the certification of invoices has been raised to 4 per cent. of the declared value of the goods.

**SIERRA LEONE.**—The export duty on palm oil is reduced from £4 3s. 4d. per ton to £1 0s. 10d. per ton.

**SPAIN.**—The rate of surcharge for April in respect of import and export duties, Customs fines, &c., paid in Spanish silver coins or notes of the Bank of Spain has been fixed at 23.19 per cent. Corrections in the new Customs tariff were published in the Board of Trade Journal (April 6, p. 386).

## Paints, Varnishes, &c. at the Building Exhibition

THE Building Trades Exhibition, which opened on Tuesday at Olympia, London, and which will remain open until April 27, houses a very representative collection of paints, varnishes, asbestos products, rock crushers, excavators, glues, lime, oils, paint mixers, sewage disposal appliances, steam shovels, water softeners, &c.

Among the exhibitors are: Associated Portland Cement Manufacturers, Ltd.; Becco Engineering & Chemical Co., Ltd.; Bell's United Asbestos Co., Ltd.; Boulton & Paul, Ltd.; British Evernite & Asbestilite Works, Ltd.; British Portland Cement Manufacturers, Ltd.; Burt, Boulton & Haywood, Ltd.; Cuirass Products, Ltd.; Empire Runways, Ltd.; Gelesco Paint Co.; Graphite Oil Co., Ltd.; R. W. Greeff & Co., Ltd.; T. Hill-Jones, Ltd.; Limmer & Trinidad Lake Asphalt Co., Ltd.; Major & Co., Ltd.; Millar's Timber & Trading Co., Ltd.; Moler Fireproof Brick & Partition Co., Ltd.; Thomas Parsons & Sons; Plaster Paints Co., Ltd.; Premier Bitumen & Asphalt Co., Ltd.; Ransome Machinery (1920), Ltd.; Rownson, Drew, & Clydesdale, Ltd.; Shell-Mex, Ltd.; S. Smith & Blyth, Ltd.; Sturtevant Engineering Co., Ltd.; Sutcliffe, Speakman & Co., Ltd.; Turner Brothers Asbestos Co., Ltd.; United Bitumen & Asphalt Supply Co., Ltd.; and Vickers, Ltd.

## A Royal Message of Sympathy

IN connexion with the death of Sir John Benn, Lady Benn has received the following message from Windsor Castle:—

"The King and Queen are grieved to hear of the irreparable loss which you have sustained, and desire me to offer you their heartfelt sympathy in your sorrow.—Private Secretary."

## Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

### County Court Judgments

[NOTE.—The publication of extracts from the "Registry of County Court Judgments" does not imply inability to pay on the part of the persons named. Many of the judgments may have been settled between the parties or paid. Registered judgments are not necessarily for debts. They may be for damages or otherwise, and the result of bona-fide contested actions. But the Registry makes no distinction of the cases. Judgments are not returned to the Registry if satisfied in the Court books within twenty-one days. When a debtor has made arrangements with his creditors we do not report subsequent County Court judgments against him.]

BUCKLEY, E. J., 44, St. Augustine's Road, Bedford, chemist, £46 15s. 11d. February 8.  
JAMES, Evan W., 56/8, Oxford Street, Mountain Ash, chemist, £21 3s. 6d., January 30; £36 15s. 3d., February 13.  
JUDD, R. D., Wheathampstead, chemist, £19 10s. 6d. February 8.  
LAMBERT, R. M., 14, Mincing Lane, E.C., drug broker, £36 5s. 3d. February 11.  
MIDDLETON, John George, 6, Arthur Street, Redcar, chemist, £11 19s. 10d. February 7; and £37 15s. 5d., February 9.  
NAYLOR, Walter Northcott, 75, Simpsons Road, Bromley, metallurgist, £26 2s. 5d. February 8.  
NEVILLES (PARIS) LTD., registered office, Woodstock Street, Oxford Street, W., chemists, £26 2s. 2d. January 24; and £26 6s. 8d., February 6.  
RAYMET & CO., Ltd., 507-509, Harrow Road, W., manufacturing chemist, £16 8s. 2d. February 9.  
RILEY, William Percy (and wife), 15, Wolsey Street, Heywood, chemist, £10 10s. 2d. February 10.  
SMITH, Sidney, 8, Hallgate, Cottingham, disinfectant manufacturer, £14 6s. 6d. February 4.  
STUCKEY, W. G. (a firm), 70, Tottenham Court Road, W., chemists, £16 4s. 9d. February 1.

### Receiverships

GLASSWORKS, LTD. T. Simons, of 7, Bucklersbury, London, was appointed receiver and manager on March 16, 1922, under powers contained in first mortgage debenture dated March 2, 1911.  
ROBARTES, LTD. J. Butler, of 26, East Parade, Leeds, was appointed receiver and manager on March 27, 1922, under powers contained in debenture dated February 7, 1921.

### Mortgages and Charges

[NOTE.—The Companies Consolidation Act, of 1908, provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an \*—followed by the date of the Summary, but such total may have been reduced.]

CHIVERS (S.) & CO., LTD., Cardiff, vinegar brewers, &c.—Registered March 31, mortgage to bank. \*Nil. June 11, 1921.  
LAMBETH GLASS WORKS, LTD.—Registered March 28, £3,000 (not excluding) charged on 51 to 59 (odd) Vauxhall Walk, Lambeth, S.E. \*Nil. June 9, 1920.  
MERCER WARD, LTD., London, W., chemists and druggists.—Registered, March 29, £200 debenture; general charge.  
TAYLORS' DRUG CO., LTD., Leeds.—Registered March 29, £650 mortgage; charged on 321, Hunslet Road, Leeds. \*£66,168 16s. 2d. November 28, 1921.

### Satisfaction

SADLER & CO., LTD., Middlesbrough, manufacturing chemists.—Satisfaction registered April 1, £13,500 outstanding July 1, 1908; and all amounts registered between April 12, 1902, and November 24, 1904.

### London Gazette

#### Company Winding Up

TURNER'S GLASSWORKS CO., LTD. Registered office, Worksop, Nottingham. Winding up order, April 4, 1922.

#### Liquidator's Notice

OPHTHALMIC & CHEMISTS' SUPPLY CO., LTD. (in voluntary liquidation). Particulars of claims to D. Roth, 13, Old Burlington Street, W. 1, the liquidator, by April 25.

#### Bankruptcy Information

HALL, Howard Ephraim, 41, George Street, Luton, under the style of HALL & SON, chemist and druggist. Receiving order, April 3. Debtor's petition.

#### Notice of Intended Dividend

GRANTHAM, Reginald, 66, Blossom Street, York, chemist. Last day for receiving proofs, April 24. Trustee, D. S. Mackay, Red House, Duncombe Place, York.

### New Companies Registered

CLARENDON CHEMICAL CO., LTD., Finsbury House, Bloomfield Street, London. Chemical and drug manufacturers; manufacturers and distributors of sodium sulphide and ammonium chloride, &c. Nominal capital, £1,500 in 1,000 "A" shares of £1 each and 10,000 "B" shares of 1s. each.  
C. E. HEINKE, LTD., 87, Grange Road, Bermondsey, London. Chemical engineers, &c. Nominal capital, £50,000 in 49,950 ordinary shares of £1 each and 1,000 employees' shares of 1s. each.  
HUGH, HIGHGATE & CO., LTD., Greenhill Oil Works, Murray Street, Paisley. Oil refiners, crushers, and exporters, &c. Nominal capital, £100,000 in £1 shares.  
JOHN A. G. KIRK (private unlimited company), West Bridge Street, Falkirk. Oil and tallow manufacturers. Nominal capital, £10,000 in £1 shares.  
PALMER, MANN & CO., LTD. Salt producers, manufacturers and merchants, &c. Nominal capital, £5,000 in £1 shares. A subscriber: G. Murray, 50, Chatterton Road, Finsbury Park, London.  
J. M. STEEL & CO., LTD., 3, Thames House, Queen Street Place, London. Manufacturers of and dealers in chemicals, cements, oils, soaps, paints, &c. Nominal capital, £100 in £1 shares.

### Chemical Problems in Electrical Industries

In a paper on "Some Chemical Problems of Electrical Industries," read before the Liverpool Section of the Society of Chemical Industry on April 7, Dr. F. J. Brislee said the outstanding problem of economical power production was still unsolved, but very low power costs were prevalent in countries where abundant water power was available, such as the United States, Canada, Norway, and Sweden. In Italy a very large power station was worked by volcanic steam from borax springs, and the results obtained were excellent. Organised research in the scientific use of fuel resources was an urgent need of to-day. The cheap production of electric power would open up a new era for society and for industry. The electrical industry, which had grown to such an enormous extent during the last few years, utilised a very large number of materials, and the demands made upon them were very severe. The choice of a material for any electrical purpose having been made, its behaviour under varying conditions of electrical stress became a problem of the first importance. The selection of a new material to meet the needs of a fresh set of circumstances frequently presented problems calling for very extensive knowledge of chemistry and the highest experimental skill. Dr. Brislee went on to discuss some of the difficulties encountered in the transmission of electrical energy, especially those arising out of electric materials. He dealt at some length with the corrosion and cracking of the lead sheath of cables when subjected to certain conditions, pointing out that corrosion of lead might be purely chemical or electrolytic or a combination of both.

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